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VOLUNTARY PLANNING BOARD

REPORT OF FUR, FISH, GAME AND RECREATION SEGMENT COMMITTEE

AUGUST 1966

101-03413/

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August, 1966

Available by mail from
The Queen's Printer, P.O. Box 368, Halifax
upon receipt of a cheque or money order
drawn to the order of
the Minister of Finance and Economics
Province of Nova Scotia

Price: $2.50

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FOREWORD

The Nova Scotia Voluntary Planning Board is creating a precedent in publishing those papers submitted to it by the Fur, Fish, Game and Recreation Segment of the Forestry Sector Committee.

At no previous time in the history of our Board have we considered publishing individual segment committee reports for public distribution. We have previously held the view that the sheer number of such reports would preclude such publication. But we do feel because of the widespread interest in the subjects included in this monograph, and because of the quality of these reports, that they should receive wider distribution.

Following the papers we are also pleased to present those recommendations from the segment that we included in our First Plan, and the action that has been taken by the Government of Nova Scotia on them to date.

I sincerely hope that those who read this document and who have comments to make will convey these comments to the segment committee's members, listed at the end of this document.

A. R. Harrington

A. R. Harrington
Chairman
Voluntary Planning Board

PREFACE

This monograph includes those papers prepared by various members of the Fur, Fish, Game and Recreational Segment Committee of the Forestry Sector. Preparation of the organization in the spring of 1963 to the presentation of its preliminary report to the Voluntary Planning Board in late 1965.

The Segment Committee is made up of those who were elected at the Truro organizational meeting, together with others who, at later dates, were asked to serve because of their special qualifications or interest. The committee as a whole met eight times. In addition, a large number of sub-committee meetings were also held.

In the early stages of our work we decided to break down our job into a number of classifications and assess the economic value of each. The task of preparing the reports on the various classifications was delegated to those committee members who had the greatest interest and knowledge in that particular field. These reports were then discussed by the committee as a whole.

An editorial board, consisting of George C. Baker, Dr. Donald G. Dodds, Hugh D. Fairn and myself, had the responsibility of incorporating in the original reports the comments and corrections of the entire committee, as well as the final recommendations that would be submitted to the Sector Committee, and through it to the Planning Board.

The job of assessing the economic values of the whole broad scope of wild-life management, as well as the multiple use of the forest and water resources for recreational purposes, is not an easy one. The greatest handicap faced by the committee in every aspect of its work was the lack of data on the economic value of this segment to the economy of the province. The economic data

in our reports were arrived at by carefully assessing the meagre data contained in reports from other areas of the continent, and by relating this information to our own knowledge of local conditions. Many assumptions had to be made but there was an honest attempt to be on the conservative side in all of the figures we finally used.

I would like to thank all my fellow committee members for the work that they have put into the preparation of these papers and in the discussion of them at the full committee level. Most of our committee members have had a lifetime interest in wildlife management and resource use. Some have been particularly active for many years in the Nova Scotia Fish and Game Association, while others are professionals in the field of wildlife biology and management.

Our job is not completed. Many aspects of the work assigned to our segment committee have not yet been investigated and reported on. It is my hope that in the continuation of our work the members of the committee will devote the same interest and enthusiasm that they have shown in the work to date.

It is my sincere hope that the work that we are doing will result in better and more scientific management of our wilderness and wildlife resources, which will lead to their preservation and enhancement in the years to come. This will benefit the ever-increasing number of people who appreciate and use these resources and, in addition, will expand the provincial economy through the increased and improved use of these resources.

G. D. Anderson
Fur, Fish, Game and
Recreational Segment.

BIG GAME REPORT

By: Gilbert Chapman[1]

Introduction -

The big game species of Nova Scotia are deer, moose and bear. Caribou are extinct except for those in our Wildlife Park. However, big game to most people means deer, and a very large segment of our population exhibits an interest in this most popular of North American big game animals. The sportsman, the caterer, the farmer, the naturalist, and the illegal hunter all profess an interest, either positively or negatively in our deer.

D E E R -

A. Present Value -

Since licenses were first sold in 1921, a total of 1,222,049 have been issued resulting in a legal reported take of 666,419 deer through the 1962 season.

In 1962, 47,410 license holders killed approximately 22,036 deer. A breakdown of the dollar values involved is provided in Table 1.

Table 1. Dollar Value - 1962 Deer Season

Number of hunters	47,410	
License sales*	$ 223,768	
Hunter expenditures**	4,049,762	
		$4,273,530
Secondary values		
Meat Value***		$ 413,175

* Based on 2 per cent non-residents.

** From Fishing and Hunting in Canada, Table 9 @ $85.42 per hunter.

*** Valued at .25 per lb. and 75 pounds per deer (1,652,700 pounds)

1 - Truro businessman and sportsman.

Hides, 9,476 sold - Royalty	$	2,369
Paid to Hunters		18,952

B. History -

Since the last glacial retreat, many birds and mammals have exhibited a northward trend in range extension. Deer are only one of a host of these species moving north. The ingress of deer from New Brunswick may have begun as early as 1870 and it seems certain that by 1890 they were established in the Cobequid region of the province. This ingress plus the introduction of deer from New Brunswick into Digby and Yarmouth Counties in the 1890's and early 1900's were the beginnings of the latter day deer history in Nova Scotia.

The spread and subsequent increase of deer were remarkable. (See Appendix 1). In 1916 an open season was declared on the mainland. In 1930, a scant 35 years following introduction, 4,500 deer were reported legally taken and by 1935 reports indicated that winter mortality was occurring. The first open season on Cape Breton Island (Richmond County) was declared in 1922. In 1928 all of Cape Breton Island was opened to legal hunting. Deer were first reported in the Cape Breton Highlands National Park area in 1924 and were dying there in wintering areas sometime prior to 1942, less than 18 years later.

Between 1910 and 1940 it was necessary for the hunter to produce proof of sex of his kill to a magistrate. Kill records were based upon these reports until a mandatory return system, which has been altered through the years, went into effect in 1942. These past reports provide us with sufficiently accurate data to recognize general trends in the kill and subsequently in the population.

The lowest reported kill of deer in Nova Scotia was in 1918, the third year of deer seasons in the province, when 69 bucks were taken. This kill amounted to .003 of a deer per square mile. The number of licenses issued is not available. The highest reported kill was in 1954 when 46,389

deer were taken. This harvest amounted to 2.2 deer killed per square mile throughout the province and .7 of a deer killed per license issued. Success ratios were highest in 1946, 1947, 1950, 1951 and 1955 when .8 of a deer was killed per license issued. A decline in total kill followed the 1954 peak until 1958 when a gradual upswing began. In 1961, a severe drop occurred and an estimated 17,682 deer were recorded taken, the lowest reported kill since 1944. The success ratio as measured by kills per license issued has been declining gradually since 1955. In 1961 hunter success was the lowest since 1939.

Regionally, the seven western counties have indicated a decline in the legal kill since 1954, the seven eastern mainland counties declined from 1954 through 1958 then increased until 1961, while Cape Breton Island declined in 1956 then increased gradually until 1961. These trends exclude the 1957 season of a more restricted bag limit. The limit was also reduced for the seven western counties in 1961.

The legal kill is an index to the pre-hunting season population. Under average conditions without excessive hunting pressure, about 20 per cent of a deer population is harvested from hunting. This is a relatively accurate figure in Maine and although ours has normally been a more liberal season since 1940, our hunting pressure is less than Maine's (2.6 hunters per square mile in Nova Scotia to 5.7 hunters per square mile in Maine.). If we assume the reported legal kill equals about 20 per cent of our pre-hunting season population, then in 1954 this province would have supported 231,945 deer just prior to the open season. Using this same estimate, we find that Richmond County may have had 22 deer per square mile in 1953 and 21 per square mile in 1954. Densities of 15-20 deer per square mile can be estimated, by this method, for several counties in the early 1950's.

Using a three-year average kill of 31,500 deer for the years 1958, 1959 and 1960 and observing that approximately 25 per cent of our kill is made in the seven western counties, 30 per cent in Cape Breton and 45 per cent in the seven eastern mainland counties. Our average pre-hunting season population for that period suggest densities of about five deer per square mile in the western counties, between seven and eight per square mile in the eastern mainland counties and over thirteen per square mile on Cape Breton Island. The average pre-season population for the province during those years would have been 157,500 deer. In 1960 the pre-season hunting population would have been only 88,410 using this index (8.6 per square mile Cape Breton, 4.02 per square mile eastern and only 2.2 per square mile western mainland).

Deer population in the past has been higher than they will ever be in the future. Following their introduction and spread into a new and favorable habitat, deer increased in the classical pattern observed in numerous successful wildlife introductions. In the process of increasing beyond the winter carrying capacity of their range time and again between 1935 and 1961, the deer actually lowered the present and possibly the future carrying capacity of this winter range. After each severe winter die-off, it takes longer for the herd to come back and eventually winter mortality increases. The winter of 1960-61 dropped our herd to a new low since the beginning of the decline from peak densities.

The estimates we have considered here are possibly low. Hunters and guides have suggested population densities of up to 50 deer per square mile in the past. It is probably true that portions of some counties exceed our maximum calculated densities using the "kill equals 20 per cent" index. Certainly for several years the deer population in the province equaled or exceeded 10 deer per square mile or well over 200,000 deer.

C. Problems -

The major stumbling block in deer management lies in the fact that the general public does not fully understand the complexities of deer biology and the deer range-carrying capacity facet of management. This lack of understanding is then transferred to those cabinet members and members of the legislature who establish regulations and the entire regulatory management approach reflects this lack of understanding. Because of this major problem, we do not have proper regulatory deer management.

A summary of the deer herd conditions provides the clues to management:

	Cape Breton	Eastern Mainland	Western Mainland
Deer Kill	Highest	Medium	Lowest
Deer Conditions	Poorest	Poor	Good
Winter mortality			
Duration of concentration periods	Long	Long	Shortest
Deer Density	Highest	Medium	Lowest
Winter range conditions	Poorest	Poor	Poor to Good

Table 7. Stems Browsed in Nova Scotia Deer Range.

Region	Per cent hardwood stems browsed*	Per cent Balsam fir stems browsed*	Per cent total stems browsed
Western Mainland	39-62	2-32	29
Eastern Mainland	42-62	5-24	26
Cape Breton Island	42-71	31-63	43

*Minimum and maximum percentages for areas sampled within regions.

The most satisfactory way *in which to maintain* a consistent harvest of well-conditioned deer is by manipulating the take through public hunting. In general, regulatory management deals with bag limits and the length and timing of the season. Just as important, however, is the effect alteration of regulations may have on hunting pressure in a given area. These, then are the regulatory tools: bag limit, length of the season, timing of the season, and the secondary result of altering these - variable hunting pressure.

The difference in the resultant harvest between a one and two-deer bag limit depends upon the proportion of successful hunters killing two deer. We kill more deer under a two-deer limit.

A longer season, however, does not necessarily mean we will kill more deer, for altering season length is further complicated by altering hunting pressure and more animals are harvested under heavy hunting pressure. Shortening a season means putting more hunters into the field over a shorter period of time, killing as many or more deer as in a longer season, and endangering human life to a greater extent. Only when the season is cut drastically to a matter of days or a week, might we expect to effectively reduce the kill. The longer season also gives more people a better chance to have their day afield.

The timing of the season may well affect the sex ratio of the kill, particularly where hunters select bucks. More bucks are killed in a later season under such conditions.

From examining the summary of deer herd condition in Nova Scotia, it is clear that large numbers of deer should be harvested from Cape Breton and eastern mainland areas for several years in order to allow the winter range of these animals to improve. This would mean decreasing hunter success for this period. Following the period of decreasing success and range improvement, a tightening of

regulations would allow a gradual increase in deer numbers. Annual adjustment of regulations to maintain a kill of about one deer per square mile from a population five times that number, would then allow consistent harvests of deer in good condition. We have reached the point of more restricted regulatory procedure in the western portion of Nova Scotia now. Following the eventual decline in deer numbers and gradual increase in eastern Nova Scotia, we may expect to harvest a deer per square mile over the entire province indefinitely. This would mean a kill averaging about 21,000 annually.

Flexibility in adjusting bag limits within regions can accomplish this objective. When the total kill begins to increase considerably, more leniency would be called for and conversely if the kill declines drastically, more restrictive measures would be in order, for once our populations are within the general limits of our winter range, hunter kill will be most effective in governing population increases and decreases.

Continuing anything other than proper regulatory management may be expected to provide years of plenty mixed with years of poverty in relation to deer. If restrictive measures are provided too soon in eastern Nova Scotia and Cape Breton, the deer herd will increase during mild winters then drop to even lower than the previous low levels during severe winters. Witness the results of winter mortality. Following the severe winter of 1951-52 our kill declined nine per cent from the previous season, following the heavy winter mortality of 1955-56 the kill dropped 21 per cent from the previous season, and following the 1960-61 winter decline, our kill dropped 45 per cent from the previous season. Reducing bag limits following winter mortality is aiding and abetting a situation which gradually destroys winter deer range and results in probable damage to forest regeneration. We can and should prevent the continuance of this problem through sensible regulatory measures.

D. Target for the Future -

Under proper regulatory management, Nova Scotia should maintain a continued annual kill of 20,000 or about one deer per square mile. It will take several seasons before we achieve a sustained yield level of this nature if proper management begins now.

Ten-year averages of deer hunting pressure, 1940-49 and 1950-59, indicate that our hunting pressure doubled between these two periods. (29,518 vs. 56,404 licenses sold per year). Our license sales have presently declined from the 1950-59 figure to an average of 53,164 for the first three years, 1960-62, of this decade. We may expect our hunting pressure to decline somewhat for a short time until proper regulatory management becomes a reality and until an increased incentive is offered to non-residents. The tremendous pressures on game population in the northeastern states will soon affect this area. This coupled with our own growing numbers will create a considerable increase, perhaps doubling the hunting pressure 10 to 15 years from now. A doubling or hunting pressure means increasing the dollar value two times.

RECOMMENDATIONS -

(1) To achieve the target for the future, deer seasons and bag limits must be made on a biological basis. This means that the recommendations, based on the continuing studies of the condition of the deer herd, made by the game management biologists employed by the province, be acted upon. This will provide increased flexibility in the setting of seasons and bag limits which is vital to proper management. The seasons and bag limits should not be determined until winter and spring surveys have been completed and the condition of the herd as well as the reproductive success are known.

Note: Following a practice of many years, the seasons and bag limits are now set in late winter during the setting of the Legislature. At this date, even the final kill statistics for the previous season are not known. Setting the season at the later date which is recommended will require action by order in Council, as is now the case in the setting of the seasons and bag limits for most other species.

(2) In Nova Scotia proper deer management must begin with "people management". An increased public relations and educational effort regarding deer management principles is necessary. This effort must be the responsibility of Government. The Nova Scotia Fish and Game Association has indicated its willingness to participate and assist in this effort.

M O O S E -

A. Present Value -

The moose today in Nova Scotia provides no direct dollar value. A certain degree of esthetic value is enjoyed by the privileged few who occasionally see moose and both positive and negative biological values could be noted.

B. History -

In 1871, Gilpin described the habits and status of moose in Nova Scotia. They were generally distributed and considered abundant. Grinnel (1926) considered moose as being "....more or less abundant in Nova Scotia, New Brunswick, and Maine...." Rand (1933) noted moose as being "fairly common" and "more common than forty years ago." In 1936, Sheldon mentioned that moose were very "numerous" and that they had been "increasing for 35-40 years."

Cameron (1947 and 1949) reported on moose and noted that moose "sickness" had been present for "two decades". In his 1947 publication he described a "crash" in moose populations in the Liscomb Sanctuary in 1935 followed by little increase. In the 1949 paper, Cameron stated that moose had been declining since 1930.

Benson (1957) reviewed the status of moose in Nova Scotia beginning in 1908, the year hunters were first required to report their moose in the following manner.

"In an attempt to increase the herd, the shooting of cows was prohibited by law in 1909. The herd promptly began to increase. But we had forgotten the age-old law of carrying capacity.

"For eight years the kill increased. If you harvest only males, the herd must increase - until something besides the hunter enters the picture. Man was not carrying out his job as predator. Nature would replace him.

"The first warning came in 1918. After a severe winter the kill dropped. This was the operation of a law of nature. This was a warning of over-population.

"One of our human weaknesses lies in the feeling that man is responsible for everything, and that man can operate as though he were the only important cog in the wheel of nature. He reduced the moose season for 1919. The kill increased slightly.

"We were not satisfied. In 1920 the season came down to six weeks. Again the kill increased slightly. The herd was straining against that upper limit - the carrying capacity of their forest home.

"Another increase was achieved in 1921 and the herd was ripe for disaster - and the disaster struck.

"The early 1920's are still famous for the severity of their winters. Deep snow kept the moose in their winter homes. Food was scarce, or moose were plentiful; either way you look at it, there was not enough to go around. Many moose died.

"The herd was reduced in this way, as it had to be reduced. If man the predator would not take the harvest, then nature would - and did.

"Recovery was fast. If females are not taken, any herd must increase toward the upper limit of their food supply. By 1926 the kill was back at its old level.

"At this time we almost broke the fetish. Cows were legal game in 1927 as they had been from the days of the Indians through the centuries up to 1909. In 1927 we enjoyed the highest kill of moose ever achieved in Nova Scotia in the period of thirty years during which kills were reported.

"It would seem that twelve to fifteen hundred bulls was the greatest possible production under a "males only" season. Could we have continued to take sixteen hundred or more of either sex?....We did not wait to find out.

"The season came down to one month in 1928 and cows were again protected. In spite of this, the kill increased for three years out of four. The pattern is that

of a herd bouncing up against that rigid ceiling - the carrying capacity of the woodland.

"Man's reaction was to believe himself responsible rather than to recognize the laws of nature which he was violating. More hunters were afield. Competition was greater. So the kill was reduced by a shortened season in 1933. Was an increase of hunters interpreted as a decrease of moose?

"Again the kill rose, only to be cut back by another shortened season in 1935.

"For two more years the kill struggled slowly upward, only to be cut short when moose hunting became a thing of the past. There has been no season since 1937.

"Game management is a short-term business when it consists of continually shortening seasons. Finally we have no more season, no more management, no more game.

"Man, as a predator, had stepped out of the picture. Nature stepped up her own program.

"Even before the season was discontinued, there was over- population with depleted food supplies and disease. After 1937 came the crash decline, with over-population, food scarcity, parasites, disease and death.

"As many as 150 dead moose were reported in one year. How many lay undiscovered in the woods is another of nature's secrets.

"Ten years later we started to study this sickness. Fifteen years later we had to admit that we could find no true sickness. The trouble was simply not enough of the right kinds of foods to keep moose healthy. There was damage to brain tissue in these sick moose - caused, so said the doctors, by malnutrition, or by the weakening effects of malnutrition.

"Did we have to wait till now to learn all this? Was it not obvious thirty years ago in 1925?"

This was the story on the mainland of Nova Scotia.

According to Clarke (1942) early accounts indicate that moose in Cape Breton were once very abundant but were slaughtered in enormous numbers for French and British garrisons, for sale to passing ships and for local use. By 1880 moose were scarce in the area of the Highlands National Park and were extirpated probably before 1900. A 1928 attempt at restocking apparently met with failure; however, 18 animals from Alberta were released in the Park area in 1947-48 by the National Parks Branch of the Department of Northern Affairs and National Resources (Cain and Huxter, 1962 from Banfield, pers. comm.). These animals were of the sub species andersoni.

At one time, Nova Scotia could be considered a part of the heart of moose range. With the disappearance of this species in most of New England and much of its original "southern" range in the central states, we find ourselves a part of the southern limits of today's moose range.

Between 1938 and 1948 moose populations peaked and crashed for what may have been the last time. In the Liscomb Sanctuary moose increased until 1943. The decline began in the Chignecto Sanctuary in 1946. The peak for Cumberland County as a whole was apparently 1946-48. Waverly Sanctuary appeared to be sustaining a peak population in 1941 and the Tobeatic Sanctuary crested about 1940. The low point in our mainland moose population appeared to be around 1949, reports indicate considerable difference occuring between areas.

C. Problems -

1. Data are lacking and an experimental-controlled moose of either sex season is required.
2. We do not fully understand the problems of "moose disease" and moose-deer inter-relationships.

D. Target for the Future -

This is difficult to determine at this time but we

could at present harvest 200 to 250 moose legally in the Counties of Cumberland, Colchester, Pictou and Antigonish.

Hunter success would probably not exceed 25 per cent if a lottery system were employed.

A minimum of 400 licenses @ 15 dollars/license would provide six thousand dollars in revenue. After administrative and registration costs are deducted, a balance of about four thousand dollars would be available to support further game management studies in 1964.

Moose are generally increasing in areas where deer numbers have declined. A potential annual harvest of 400 to 500 moose might be possible from a sale of 1500 to 2000 licenses, beginning about 1968. Two Thousand licenses at 15 dollars each equals 30 thousand dollars. Meat value of 400 moose at 400 pounds each and 25 cents per pound equals 50 thousand dollars. Moose might well provide an 80 thousand dollar industry in five years time if proper funds are available for research, management and protection.

E. Recommendations -

1. That there be an experimental-controlled moose season by lottery to harvest 100 to 200 moose. (Note: We are happy to report that this has already been recognized by Government and a season proclaimed for 1964).

2. That there be increased emphasis on moose research and management, particularly with reference to the round worm parasite thought to be the cause of "moose disease", to make this animal an asset instead of a liability.

3. These steps must be taken before any targets for the future can be achieved.

B E A R -

A. Present Value -

Bear are an economic liability to the province today. Bounties are paid to a privileged few from both municipal and provincial tax sources.

B. History -

Bear have been persecuted since white man first settled in this province. During the years when more extensive amounts of land were under cultivation and when trappers and woodsmen lived under more primitive conditions than today, the bear was often an important depredator, nuisance and a general problem. Today this is not true.

C. Target for Future -

1. A legal harvest of 250 to 400 bears might be realized under baiting regulations. Possibly 100 could be harvested by sportsmen in the fall with special effort and a halt in bounty payments. At present, an average of over 200 bears per year are bountied in Nova Scotia. All municipalities do not have bounties. A minimum estimate of 50 are taken by sportsmen or killed otherwise and not bountied.

2. Values would depend largely upon the licensing system involved but might amount to 150 dollars per bear harvested including meat, trophy, hunter expenditure and license value. A season would necessitate a special license and could provide a departmental revenue over and above any expense involved.

D. Problems -

1. The bounty system prevents the bear from becoming an economic asset to the province.

2. Data on bear numbers, movements and general biology in Nova Scotia are too few for the practical management of this species.

E. Recommendations -

1. Bear should be classified as a big game animal, and appropriate fall seasons and bag limits be established.

Notes: - a. An average of 2,672 dollars per year has been paid by Provincial Government on about 225 bears each year since 1947 (plus municipal bounties). The bounty money was paid to a few individuals.

b. Most bear taken are caught in the western end of the province where we have our best population of these animals. They are trapped in wilderness type areas where they would have little opportunity of acting as depredators.

c. The bounty method is indiscriminate and catches not only a majority of harmless bears but other valuable animals. As an example, several valuable fisher have been taken in bear traps in the past few years.

d. The bounty method tends to induce and perpetuate fraud, and has done this in Nova Scotia.

e. Bounties will never "control" a population for the bountied animal is the source of income which the bounty hunter must not destroy.

f. The depredation damage by bears in Nova Scotia is very minor. Over the last 10 years, there has been but one or two cases each year where damage to farm animals could be positively attributed to bears. Declaring the bear a big game animal would not prevent the killing of these marauder bears.

g. The monies expended in bounties far exceed the damage caused by a few bears, cause harmless bears to be trapped indiscriminately, do not "control" bear numbers, pay a few individuals instead of allowing a larger segment of the public and the province to reap economic benefits from this sport animal. The bounty system on bears encourages the use of traps which also destroy valuable fisher which can and do help keep porcupine numbers to a minimum.

h. As a big game animal, we would not only reap the benefits of recreation in hunting the bear as a sport animal, but the bear could become an economic asset to the province.

2. Increase emphasis should be placed on bear research and management.

APPENDIX # 1.

DEER KILL

1916	-	154	1940	-	8,717
1917	-	101	1941	-	10,784
1918	-	69	1942	-	10,233
1919	-	198	1943	-	9,203
1920	-	125	1944	-	12,939
1921	-	255	1945	-	20,124
1922	-	232	1946	-	26,750
1923	-	147	1947	-	30,007
1924	-	174	1948	-	30,934
1925	-	280	1949	-	30,318
1926	-	281	1950	-	37,176
1927	-	635	1951	-	42,343
1928	-	987	1952	-	38,481
1929	-	1,316	1953	-	43,330
1930	-	1,886	1954	-	46,389
1931	-	4,685	1955	-	43,400
1932	-	4,866	1956	-	34,332
1933	-	1,216	1957	-	21,065
1934	-	1,327	1958	-	30,957
1935	-	996	1959	-	31,701
1936	-	1,950	1960	-	32,329
1937	-	2,185	1961	-	17,682
1938	-	6,727	1962	-	22,036
1939	-	6,224			

668,246

Table 3. Observations of Moose on Nova Scotia Sanctuaries from Wardens' Reports[1]

	1934-38	1939-43	1944-48	1949-53	1954-58	1951-61
YEARS -	5	5	5	5	5	3
Liscomb -						
Males	141	202	25	2	6	0
Females	351	455	40	4	2	1
Calves	113	128	22	1	1	2
Unid.	44	123	20	0	0	0
Dead	Several found and not recorded.					
Chignecto -						
Males		239	225	61	21	7
Females		471	425	94	13	5
Calves		77	122	25	3	0
Unid.	Not recorded as such.					
Dead		5	4	4	1	0
Waverly -						
Males	123	146	76	16	9	11
Females	290	380	208	40	29	18
Calves	75	117	47	6	2	1

	1934-38	1939-43	1944-48	1949-53	1954-58	1951-61
Waverly -						
Unid.	Not recorded as such.					
Dead	Not recorded.					
Tobeatic -						
Males	319	364	122	50	5	4
Females	602	847	387	94	11	10
Calves	374	370	76	18	0	4
Unid.	0	1	4	0	0	0
Dead	29	5	1	0	0	
Totals -						
Liscomb moose observ.[2]	649	908	107	7	9	3
Chignecto moose observ.		787	777	180	37	12
Waverly moose observ.	488	643	331	62	40	30
Tobeatic moose observ.	1,295	1,582	589	162	16	18

	1934-38	1939-43	1944-48	1949-53	1954-58	1951-61
Av. Sanctuary moose observ. per year.	486[3]	784	361	82	20	21
Av. sanctuary deer observ. per year.	590[3]	2,205	2,221	2,469	2,215	1,243

1 - Sex ratios cannot be considered accurate as winter observations were sexed when the probability of accurate sexing was slight.

2 - Live moose only.

3 - Except Chignecto.

UPLAND GAME

By: W. S. Dickie[1]

Our province, located as it is on the Eastern Seaboard of North America, and being almost entirely surrounded by the sea, has established in the minds of most people three principal physical characteristics. These are the seacoast areas of bays, harbors, inlets, etc., the forested regions and the surface occupied by fresh water lakes.

In the matter of recreation, these areas perhaps take the attention of the vacationer and of the traveller and form the habitat of various wild life species. There are, however, large and important sections not included in the foregoing parts of our geography, which are known generally as farm lands. Some of these lands are cultivated at present; others have been cultivated in the past, some are in their virgin state while others are being added, such as dykelands and still others are eroding away.

In these regions just mentioned, exists one of the province's most valuable assets. The name "Upland Game" covers this particular resource to identify it as a separate entity from other wildlife species using the same areas. By the same token since we are trying to establish economic values for fur, fish and game, some consideration should be given to wildlife not specifically designated to any category but in this case of the same congener as Upland Game. Here I refer to the smaller animals and song birds which are a part of nature's structure and make a considerable contribution to our Nova Scotia way of life. This study, however, is directed principally toward the setting up of annual economic values of such species as Pheasant, Ruffed Grouse, Woodcock, Varying Hare, Hungarian Partridge, Fox, Raccoon and Wildcat.

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1 - Retired Commercial Manager, Maritime Telegraph and Telephone Company Limited.

Taking the species mentioned in the order of listing, the first is the Ring-necked Pheasant. While this bird is not a native of the province, it has adapted itself very well to our conditions and is one of our prized sporting types. There are various features which make it attractive to the sportsman, namely, colorful appearances, spontaneous flush accompanied by startling raucous cries and rapid flight. The "native" birds have provided an annual harvest of approximately 2,000. The economic value taking into account licenses, hunter expense and food value is about 30 thousand dollars. The private preserves which supply hunting services to sportsmen, also raise birds for sale and the economic value of the operation is approximately 45 thousand dollars per year and is increasing. There are nine of these preserves now in operation.

Ruffed Grouse: This native bird is one of our most highly prized sporting assets. The habits of this species make it one of our most attractive and eagerly sought game birds. The highest level of sporting activity is that of bagging them, under conditions which require great skill and sportsmanship. So far no satisfactory method has been found to reproduce them from captives so the entire harvest is dependent on natural reproduction of the wild birds. There is an estimated annual kill of 46 thousand in the province and reliable estimate of cost per bird bagged is ten dollars. The economic value of the species is, therefore, approximately 460 thousand dollars per year.

Woodcock: This exotic bird is greatly revered by sportsmen as one providing a maximum of sport to those who are sufficiently skilled and have the equipment to bag it. The cost in time, equipment, dogs, travel, etc., in relation to the food value of the harvest makes it an expensive undertaking.

On the advice of expert gunners who follow this sport, the economic value is high. There are approximately

one thousand participants in this particular sport who spend six thousand hunting days to kill 24 thousand birds each year. The cost per bird bagged is estimated at thirteen and one-half dollars for a resident and twenty-three and one-half dollars for a non-resident. The average would probably be about sixteen and one-half dollars per bird, making an economic evaluation of 390 thousand dollars per year.

Varying Hare: This animal has been considered as one of the "basic" game species of our province and in recent years has attained the status of a sporting type animal. It is fairly well distributed and the harvest is on the cyclical conditions which control the scarcity or abundance of these animals.

Data which are obtained from meagre returns lead one to believe that the present annual kill is about 140 thousand (This does not include those snared). Basing the economic tag of two dollars per hare bagged, we have an annual harvest of this species valued at 280 thousand dollars. This is the cost of hunting the species. If a food value of the harvest is added the economic value would be 330 thousand dollars.

Hungarian Partridge: There is not a shred of data which can be used to determine either the number of this species shot or the cost of hunting them. The potential of this bird is tremendous for three reasons:

1. it has many characteristics of sporting type birds,
2. it belongs to the order of galliformes and will reproduce under favorable conditions,
3. it has a high value as food.

With proper direction the economic value of this species could be built up to 250 thousand dollars without very much capital investment.

Fox - Raccoon - Wildcat: These three animals are in our open fields and wooded areas in great numbers. The extent of their distribution or any other data on them are not available.

If a program of sport hunting for these species was promoted the economic value of them would be noticeable at once. The hunting of all three requires special equipment, highly developed hunting skill and would provide recreation at a time when other hunting activity is very low. It is believed that with a program aimed at promoting this as a sport the economic value would reach 100 thousand dollars annually.

The foregoing are the explanations of rough calculations made to establish economic values for each species. The following are the amounts calculated:

Ring-necked Pheasants	$ 75,000
Ruffed Grouse	460,000
Woodcock	390,000
Varying Hare	330,000
Hungarian Partridge	(Not known - potential - $250,000)
Fox) Raccoon) Wildcat)	(Not known - potential $100,000)
Total	$1,255,000 + potential $350,000

It is quite obvious that this study is very rough because of the lack of basic data. If a licensing system can be introduced which will provide some authentic kill information, a study of greater reliability can be made.

WATERFOWL

By: H. D. Fairn[1] and Editorial Board

1. Nova Scotia's role in the ecology of the species

Nova Scotia's 4500 miles of salt water coastline and 700 miles of coastline in the Bras d'Or Lakes provide the principal concentration areas for ducks and geese. The nature of the soils and the low fertility of the waters in the inland fresh water areas of the province prevent them from producing as many migratory waterfowl as one might expect.

Ducks and geese are found to a greater or lesser degree in both these areas. But while fresh water lakes, ponds, streams and marshes are necessary to the production of some birds, and provide resting and watering places, the areas fronting on salt or brackish water are most important to the welfare of the various species.

The North American continent is divided into several flyways or migration routes. Nova Scotia is on a route designated as the Atlantic flyway. Birds in this flyway move between Labrador in the north and Southeastern United States, depending on the season. They breed in the north and winter in the south. While there is some overlapping of migrating species between one flyway and the next, birds raised on one flyway generally stay on it.

The number of birds in the flyway depends on the success of breeding in the north, which in turn is dependent on weather and water conditions and prevalence of predation, and again on the water and weather conditions and food availability in the southern wintering areas. These, in a general sense, may be considered to be the natural factors affecting the number of birds in the flyway.

The unnatural factor which greatly influences the

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1 Partner, Leslie R. Fairn and Associates.

the total number of birds in the flyway is the human factor or hunting pressure. This latter might be considered to be the most easily controlled factor as seasons, bag limits, sanctuaries, etc., may be arranged by waterfowl management specialists to compensate for lean and good years in waterfowl population.

Nova Scotia, situated in the northern half of the Atlantic flyway, provides tourist accommodation for large numbers of birds going south in the fall and north in the spring.

Secondly, it is a breeding and nesting area. Birds that are hatched and raised here, all things being equal, will return to the same area as breeding stock.

2. Habitat for breeding and harvesting is shrinking

The prime areas for waterfowl concentration have been in the border areas near Amherst, along the eastern shore, along the south shore, and in the Minas Basin and Annapolis Basin areas. Very little change has taken place in the recent past in the availability of marshlands, tidal flats, estuaries, etc., on the eastern and southern shores of the province. However, such is not the case in Cumberland, Colchester, Kings and Annapolis Counties.

In the past few years more birds were raised in and more birds used the vast salt marsh areas of the border region and the Minas and Annapolis Basin areas, than used coastal areas of the eastern and southern shores. The very high rise and fall of tide in the Northumberland Strait and Minas Basin and Annapolis Basin exposes a far greater area at low tide to feeding waterfowl, than does the six to eight foot rise in tide on the eastern and southern shores.

Civilization long ago began to encroach on these Northern shore areas.

The early French settlers began this trend by putting dykes around the perimeter of the marshes and sealing out the sea, draining and tilling the land contained within the dykes. The waterfowl, as well as the seawater, were

effectively shut out beyond these dykes.

With passing years more and more dyking and drainage was done; less and less of the original salt marsh remained to the waterfowl until, today, we know that some fifty-five thousand acres have been reclaimed from the sea, and one might say, from the migrating waterfowl, by the Maritime Marshland Reclamation project. Thousands of additional acres have been shut off by private and government works so that the birds which formerly nested and raised broods over these vast marsh areas cannot find enough water to wet their feet and are driven away from any possible nesting sites by plows, seeders, combines, etc. They have ceased to breed their former numbers, and have ceased to stop over in migrating as they did in years past.

At the present time there are two, and only two, salt marshes left in the Cumberland Basin. One is at the tip of Amherst Point and is of about five hundred acres, and one over the hill from the Amherst Point Sanctuary of about thirteen hundred acres. There is no doubt that if these two marshes are drained there will be a definite drop in the early population of ducks in that area. There is more salt marsh left in the Minas Basin area than in the Cumberland and Annapolis Basins, and what is particularly needed in this area (Canning to Windsor) is adjacent fresh marsh areas. Nonetheless, the preservation of the remaining salt marsh is essential to the retention of present populations. In the Annapolis Basin, marsh area has decreased considerably.

Unfortunately, not all of the land reclaimed for agricultural purposes has proved to be useful for these purposes, and after much expense in dyking and draining, some land now lies useless to either agricultural purposes or to waterfowl. This is extremely lamentable.

3. Present population trends

Data concerning numbers of waterfowl taken in the province, breeding and migrating populations are regrettably incomplete. However, it is generally agreed that in Nova

Scotia (witness the decreasing bag limits over the years) there are fewer ducks available today than in the past, and more hunting pressure.

Current increasing trends in human population, wages and spare time suggest that hunting pressure on waterfowl and the demand of other recreation will increase. Conversely, current trends in land use are detrimental to waterfowl and obviously have been an important factor in reducing breeding stock and waterfowl utilization of marshes in the Nova Scotia - New Brunswick border area, Minas Basin and Annapolis Basin. Many specific examples can be cited, but aerial breeding pair inventories illustrate what has happened to breeding stock. Between 1953 and 1963 breeding populations of black ducks have dropped 70 per cent, and a summering concentration of males in the Minas Basin has declined 63 per cent. The decline in Atlantic flyway black duck populations cannot be correlated with the decline in these areas and certainly does not approach the same magnitude.

4. Present economic value

The statistical work, "Hunting and Fishing in Canada", published by the Department of Northern Affairs and Natural Resources, reports the average annual expenditure per waterfowl hunter in Canada is seventy-nine dollars. The number of people who hunt waterfowl in Nova Scotia is not known directly, but on the assumption that the per capita distribution of hunters in Nova Scotia is typical of the Canadian average, it is calculated that the expenditure on waterfowl hunting in this province is roughly 1,460 thousand dollars per annum.

On a similar basis of calculation, the sport provides about 150 thousand recreation days per year in Nova Scotia for approximately 18 thousand hunters.

The annual take of waterfowl in Nova Scotia is not known precisely. However, on the basis of information gained from banding, Nova Scotia appears to account for

about 2.6 per cent of the total Atlantic flyway kill, or about 100 thousand ducks. The number of geese taken is estimated at 15 hundred per year.

5. Potential value

No definite statement can be made as to future waterfowl populations. Nevertheless, it can be anticipated that fluctuations will occur on a flyway basis. Canada geese are now at the highest population level known to the Atlantic flyway, and black ducks are at an extreme low. Teal population fluctuate violently, and no prediction can be made for this species. Ring-necked ducks are currently declining from a peak population in or about 1960.

Waterfowl habitat development is beyond the exploratory stages. It is a proven method of management that works, both from the standpoint of producing more ducks and in concentrating migrating ducks for hunter harvests. Whether or not waterfowl production and utilization within the province can be sustained or increased to meet these demands is dependent upon the attitude taken toward multiple use by land use planners, and the willingness of those entrusted to accept the responsibility of preserving and developing renewable resources for public use.

Regardless of the many unpredictable factors which may influence future waterfowl populations, it can be said that Nova Scotia will be able to produce and harvest a larger proportion of the flyway population if suitable habitat is provided, maintained and managed correctly. The economic benefit from each additional bird harvested would be 10 dollars or more.

6. General objective for improvement

We now see the situation as at present in the Province of Nova Scotia, an area which by all accounts was designed to be a waterfowl paradise. Man enters the scene, destroys much of the opportunity for the natural reproduction of the species, drastically limits the area in which non-resident migrants can rest, and, at the same time,

unleashes heavy hunting pressure on the remaining birds. The end result of all this is not too difficult to see, and it seems that the duty of this generation would be to set about immediately to preserve what is now available to migratory birds; to perhaps restore some of the areas which are at present of no use to man or to the birds, and, through a progressive program of management and research, increase the productivity of the remaining available breeding and concentration arrears.

Where can we begin?

7. Specific objectives for improvement

The public should be acquainted with the seriousness of the situation. People are not well enough aware, and take very little interest in the wildlife management until it is too late. This has happened in many areas in North America.

The remaining salt marshes in the Cumberland Basin must be controlled in the interest of waterfowl. The Canard and Cornwallis marshes Boot Island in Kings County must be preserved for waterfowl. The Chebogue marsh in Yarmouth County should be controlled similarly. The south and east shores are not in immediate danger of over-zealous agricultural development, and therefore, immediate attention to these areas is not as demanding.

There is an organization formed by American and Canadian sportsmen known as Ducks Unlimited, which through private subscriptions and contributions and support from large sporting goods manufacturers in the United States, have spent over 10 million dollars in the past number of years obtaining control of important waterfowl breeding and resting areas, primarily in the Canadian West. What they have done for the waterfowl on these flyways and for the people of North America could be valued far above the 10 million dollar figure.

Only recently this organization has made an offer to spend 100 thousand dollars for waterfowl development in

Nova Scotia. This involvement in Nova Scotia would mean that Ducks Unlimited are coming to the east coast and may establish an office here for which other works of like nature might be undertaken. The advantage of such are tremendous. The only condition that Ducks Unlimited asks is that the provinces of Nova Scotia and New Brunswick enter into a ninety-nine year agreement with Ducks Unlimited whereby they may be free to conduct their program in this area.

Ducks Unlimited are not interested in buying land, but will lease land made available to them. The Province of Nova Scotia has wisely acquired the Missiquash Marsh for such purposes.

In order to acquire resting, feeding and breeding areas, and subsequently, to develop these areas, there must be a greater expenditure of money than at present. Most hunters are willing to share in such costs.

They would rather pay a higher license fee, perhaps, and know that the money from this fee would go directly to wild life management.

8. Summary

In summary, for the purposes of this report, ducks and geese are treated alike in their requirements as to breeding and nesting habitat, and feeding, resting and watering areas. Waterfowl are decreasing, hunting pressure is on the increase and the trend of the one in one direction and the trend of the other in the opposite direction must (if not altered) eventually lead to the point where hunting waterfowl will be a forgotten pastime as far as Nova Scotia is concerned. And its economic value will be lost.

At the present time the Atlantic flyway birds which are nesting north of Nova Scotia are stopping over here in decreasing numbers proportionate to the decreasing resting, feeding and watering acreage. We are raising fewer native waterfowl than previously.

The Nova Scotia Department of Lands and Forests, with the information that they have assembled and prepared, can carry out a program which will increase the number of waterfowl raised in our province and stopping over in our province. If this is done the native sportsman, the visitor from less fortunate areas in the Eastern United States, the tourist, and any citizen with an appreciation for the beauty of a flight of migrating waterfowl will be repaid many times over for the small investment required.

Recommendations

1. Government should take immediate steps to acquire salt and fresh marsh areas to insure the preservation of this remarkable resource.
2. Nova Scotia should encourage and assist Ducks Unlimited and other individuals and agencies to proceed with the development of these acquired marshes.
3. The Wild Life Division of the Department of Lands and Forests must be provided with sufficient means to increase research work, to obtain more data of waterfowl through banding, to conduct surveys of our inland water systems to determine a means of increasing local productivity, and to enable this department to more effectively enforce more selective seasons and bag limits, which will come as information is collected.
4. Realizing the additional expenditures involved in these recommendations, and realizing that most hunters are prepared to share proportionately in these costs, it is recommended that a system of licensing for waterfowl hunting be instituted. This will have a dual advantage in providing increased revenue and much-needed information by way of license return.
5. As in other forms of wild life management, water-

fowl management suffers from the lack of public education in this field. It is recommended that an active public education program be instituted immediately.

COMMERCIAL WATERFOWL SHOOTING PRESERVES

By: H. D. Fairn[1]

Before presenting this report, I think it is of significance to mention the personal feelings of the writer as regarding the dollars and cents value of the economy of this province from its waterfowl.

One might as easily discuss the value of a beautiful crisp fall day in the woodlands of Nova Scotia, or the value of the fresh, clean air of our seacoasts and woodlands, or the economic value of any excursion into the realm of nature, whether it be hunting, fishing or hiking. I find it so much of a subjective thing, and I am sure that the true value of the waterfowl to the hunter, nature-lover, tourist or casual observer is such that each might put a different dollar figure on it and many would not realize the extent of the value of these resources until, as is highly possible, they might be lost to them forever.

The particular problem, however, is to discuss the economic value of waterfowl shooting preserves as may be applied to this province.

First, it is important to note that the shooting preserves which have been established in this province have been for upland game birds only, and feature ring-neck pheasants. Those, I believe, have been mainly successful, and have filled a need for the type of shooting offered. It was necessary, therefore, to correspond at some length with agencies and individuals in the United States where waterfowl preserves have operated and are presently operating with some success. Notable among these is the flighting mallards at Nilo Farms, operated by Olin Mathieson Chemical Corporation at East Alton, Illinois. It might be well to mention here that any game preserve, whether for upland bird shooting or waterfowl is of very real value in that it is likely to take some of the hunting pressure off the wild

1 - Partner, Leslie R. Fairn and Associates.

birds, which, we all realize, are under heavier gunning pressure today than at any time in the history of this province..

A brief explanation of the procedure involved in flighting mallards shooting at Nilo Farms might be of interest. I am quoting from a report of his shooting experience at this Farm by Lucien Cary, a well-known sportsman and hunting authority: "After my experience in shooting ducks at Nilo Farms last winter, I have no patience with a man who says he ' doesn't shoot tame ducks'. The shooting was more difficult than the shooting I had at Stuttgart, Arkansas, or in Saskatchewan." The ducks are held in a big pen with a ramp and a chute. Two hundred and fifty or 300 yards away is a pothold in the woods. The ducks walk before they are old enough to fly, from the holding pen to the water and back twice a day. Thus, they are trained to follow a course. By law the mallard ducks used on a game preserve must be two generations removed from the wild. But don't think they can't fly.

The blinds at Nilo are some distance ahead of the water for which the ducks are heading. They come over a hill so you don't see them until they are in range, or nearly so. The blinds are so built for safety reasons that the shooter cannot take a going-away shot. In fact he can't shoot at more than a right-angle to the flight. There is little time between the instant when you see a duck and the last instant when you can shoot. It is the toughest kind of pass shooting. More and more preserves are going in for it. And more and more shooters are learning how much harder that kind of shooting is than shooting ducks over decoys.

Nilo Farms have proved that ducks for preserve shooting can be reared more cheaply than pheasants and the shooting layout requires far less space. Mallards are the most popular duck in waterfowl shooting preserves because operators have proven there is more profit per bird than any other species used.

The greater number of waterfowl shooting preserves utilize the waterfowl as a sideline only, depending for the greater part of their business on pheasant or quail. The other reason for a combined waterfowl preserve and upland game preserve is that the flighting of the waterfowl lasts for only a short time, and whether a hunter gets his limit or not he is not satisfied if a day's hunting may only have lasted thirty minutes. Most waterfowl shooting preserves consider four birds as a minimum bag.

The mallard duck, as has been mentioned, is by far the most popular species. Others, such as the black duck, have been used, but the mallard lends itself most easily to the training required and is easily kept, and, therefore, more profitable to the operator.

In the United States where most waterfowl preserves are in operation most operators buy day-old ducklings at a cost of thirty-five to fifty cents each, as they have found that hatching is a most unsure and costly method of obtaining a preserve flock. These ducklings are kept in brooders, and when the ducklings have reached twenty-two days of age, they begin their training. They are taken from the holding and feeding pens to the pond, being driven along the duck walk and then back to the holding or flight pens.

This procedure is followed every day until the ducks will walk to the pond and back to the pens on their own. When the young ducks are between fifteen and seventeen weeks of age, they will be showing evidence of flying ability, and it is at this time that the operator will take up the duck walk fence and begin to make use of the ramp. The young ducks are released on to the ramp, a few at a time, there they are urged up to the flight platform. From this platform the ducks begin their first flight toward the pond. From force of habit the ducks will return to the pen at night for feed and when released in the morning will fly to the pond.

It is during the morning flight to the pond that the operator permits shooting from the blinds along the route between the ramp and the pond, a distance of some 500 yards.

Nearly all shooting preserves charge by the number of ducks bagged. Most operators charge five dollars per duck. The cost involved in raising the duck to shooting age may be totaled between two fifty and three dollars. This figure includes allowances for crippled duck losses, and the few strays which may be expected, cost of duckling and its feed, labour and unexpected expenses. The operator would then, at a charge to the hunter of five dollars per duck, make a profit of two dollars per bird. A keen operator who is able to trim his costs could double his money. It would, therefore, be possible for an operator with one thousand ducks to pay for his entire layout for ponds, pens, fencing, ramp, etc., in a year.

The above figures and conclusions are taken from a report written by Charles Dickey. A somewhat different conclusion is reached by Dr. Ed. Kozicky of the Conservation Department of Olin Mathieson Chemical Corporation in his economic survey of shooting preserves for the 1958-59 hunting season. He feels that an operator should handle between four and five thousand birds to show a return of between four and five thousand dollars. This allows for a net profit of only one dollar per bird. However, Dr. Kozicky's figures regarding capital investment for the preserves are much higher than the figures previously cited, and he is including an amount necessary to amortize the high investment in land, pens, equipment, etc. He also makes the notation that shooting preserves should be located within thirty miles of a population center of at least 25 thousand persons.

The question may be asked, what has all of this to do with waterfowl shooting preserves in Nova Scotia? And in attempting to answer this, I must point out that there is no legislation in the Province of Nova Scotia in support of the establishment of waterfowl shooting preserves, as there

has never, as yet, been an application by any party or parties interested in doing so.

The Government of the United States has passed a law stating that any waterfowl more than two generations removed from the wild state is no longer considered a wild bird and, therefore, comes under the regulation of state government. Unfortunately, such is not the case in Canada, as our Federal law prohibits any form of liberating live birds of any type for the purpose of being shot when they are liberated.

Only this spring the Ontario Game Breeders Association submitted a paper to the Federal-Provincial Wild Life Conference in Ottawa, requesting the use of mallard ducks on licensed shooting preserves in Ontario under the supervision of the Department of Lands and Forests. At present, there is no information available regarding government action on this request, and any proposed waterfowl shooting preserves in any part of Canada must await changes in the legislation regarding the Migratory Birds Convention Act as it effects Canada. It is seen that these laws are interpreted much more rigidly here than in the United States in this respect.

Conclusion: The feasibility of the establishment of waterfowl shooting preserves in the Province of Nova Scotia cannot be proven from the data at hand as: (1) a change in the laws regarding waterfowl must be made, (2) a survey of the province in an effort to establish sites for such preserves with a view to keeping preserve birds away from natural waterfowl flyways should be undertaken, and (3) it is extremely doubtful whether capital outlay necessary to properly equip a waterfowl preserve would be justified, considering the present population of this province.

The answers to the many questions that might be raised in regard to these conclusions can only be found

when some agency or party feels that this would be a profitable venture, and undertakes to establish such a preserve. Figures indicate that it takes between three and five years for a newly established preserve to begin to operate in the black, as a great deal of public misunderstanding may be expected in regards to shooting birds raised in captivity and released under controlled conditions.

In summary, I might state that the establishment of such a preserve at this time in the Province of Nova Scotia would be premature and that our present stock of wild birds, if given reasonable protection and enlightened management will doubtless carry the increased hunting pressure. The day will come, however, when waterfowl shooting preserves will be an accepted part of the recreation resources of this country and the next generation may be privileged to enjoy a very unique and exciting, although somewhat less than natural, waterfowling experience.

NOTES RELATING TO ANGLING FOR SPORT IN THE PROVINCE OF NOVA SCOTIA

By: Forrest Watson[1]

Nova Scotia has a land area of 21,425 square miles with approximately 5,000 miles of coastline.

The population in 1963 is estimated at 756,000.

By authority of the British North American Act, fisheries in and around the province come under the jurisdiction of the Federal Government.

The fresh waters of the province are controlled by the Provincial Government.

Many species of fish inhabit the fresh water lakes and streams, the river estuaries, and the coastal waters, where angling for sport is carried on.

Laws regulating the taking of fish at any time or place are made under the authority of the Fisheries Act (Canada).

Fisheries regulations pertaining to Nova Scotia define Sport Fish as Salmon, Trout and Black Bass.

Other species taken for sport by angling include:- White and Yellow Perch, Pick, Chub, Suckers, Eels, Smelts, Shad, and Alewives in fresh water; Striped Bass, White Perch, Cunner, Smelt, Mackerel, Pollock, Cod, Hake, Haddock, and Flounders are taken by anglers in salt water along the coastline. Tuna and Swordfish, known to anglers as big game fish are taken by fishing from boats in coastal waters, as are also some other species previously mentioned.

Anglers in Nova Scotia have a wide choice of fish and fishing grounds but fish mainly for Salmon and Trout in fresh waters; for Mackerel and Pollock in salt water, and to some extent for Striped Bass in river estuaries and along certain sections of the coastline. Most angling in fresh water is carried on adjacent to highways and other access roads easily reached by cars. Shore fishing in salt water is increasing in popularity for the same reason. Boat fish-

1 - Retired Fisheries Officer, Department of Fisheries, Canada

ing for sport in coastal waters where angling is done by means of rods and hand lines is also developing.

To the present time little has been done to evaluate angling as a sport in Nova Scotia, at least from an economic point of view, and while some statistical data are available from Government sources, especially regarding Salmon, very little accurate information concerning other species is on record.

Government expenditures on fisheries as a whole are readily available, but such expenditures usually cover commercial fisheries as well as angling for sport. Personnel employed in conservation and development work spend time and money carrying out multiple duties and these are difficult to separate.

Information Required

1. What percentage of the resident population angle for sport?
2. How many non-residents engage in angling while in Nova Scotia?
3. How many "rod days" does each person fish? (rod days may be defined as dates. A day or any part of a day when the person engages in angling is calculated as one rod day).
4. What species does he fish for?
5. How many of each kind does he catch?
6. Where does he catch them? (fresh water, estuary, coastline, constal)
7. What is the average weight of each species?
8. How much money does he spend each year for (a) fishing gear, (b) transportation to and from fishing grounds, (c) camping or lodging, (d) food and refreshments, (e) guide service, etc.?

If we had answers to the foregoing questions we would be able to calculate the cost per pound of fish to the angler, and the kinds of fish and methods of fishing which

interest the majority of people. We would also be able to estimate the productivity of various waters and their economical value for angling. The amount of money required for stocking, maintenance and restoration or improvement of habitat could then be calculated.

Good habitat with adequate natural food and shelter is the best means of sustaining wildlife on the land and in the water.

The basic industries of Nova Scotia, agriculture, forestry, and mining, together with the expansion of towns and cities, highways and airports, have resulted in the loss of living space for wildlife and industrial wastes, and also the unwise use of pesticides has added to this loss.

It is fundamental that wild animals like ourselves, must breathe, eat, rest, protect themselves from enemies, and be able to propagate their species. If the environment or habitat in which they find themselves is suitable, they will stay. If any of these basic factors are missing they will move away or die. The abundance or scarcity of wildlife in a given area depends on this.

We have an abundance of wildlife in the sea because man has not changed the habitat. River estuaries are usually productive because of the adequate food supply and because their size and depth usually defeats the effects of pollutants. In fresh water lakes and streams living conditions for fishes are not as good.

Loss of cover due to logging operations changes the runoff. Sometimes this results in spring fed tributaries being lost. Rapid evaporation takes place and results in low water levels with accompanying high water temperatures. Fast runoff causes flooding and scouring. Silting and loss of shelter results. The fish habitat is destroyed. They find it hard to breathe. Natural food becomes scarce. Their enemies harass them so they move away or die.

Farming methods often cause the same result. Land is ditched and drained or water is used from the streams to irrigate it. Much silting often results and chemical poisons used in modern farming methods, when carelessly handled, make natural habitat unfit for fish to live in.

Waste material from mines sometimes pollutes good water if adequate precaution is not taken by the operators.

Unwise and improper use of land and fresh water resources upsets the ecological balance of a region and is the greatest destroyer of wildlife.

Fresh water is probably our greatest natural resource. We must conserve it, control it, and keep it clean.

What should be done to maintain, and if possible, increase the supply of wildlife? Insofar as fishes are concerned it is recommended.

Recommendations for Improvement

1. We should try to find answers to the questions previously listed. This might be done by publishing questionnaires which would be completed by Tourist agencies or Tourist bureaus, by Fisheries Officers and Rangers, by Outfitters and Guides, by Fish and Game Associations, or by Agents employed for the purpose. It might also be done by using a license system to compel returns of information. Statistical information now in the hands of Government agencies should be collected, computed, compiled and analyzed, e.g. Reports of Salmon and Trout Section of Federal-Provincial Atlantic Fisheries Committee. Annual Reports of Federal Fisheries Officers. Special Reports of Fisheries Biologists, etc.
2. Present conservation and development programs

should be reviewed in order to assess results of past expenditures. New programs or projects aimed to protect, maintain, restore, or establish natural habitat for wildlife should be commenced.

3. The use of fresh water by industry should be strictly controlled in order to safeguard natural habitat.

4. The introduction of exotic species should be carefully examined by competent authorities, especially in water systems now carrying populations of Atlantic salmon and Speckled or Brook trout.

5. Education in wildlife management should be encouraged and more trained personnel should be employed to keep pace with rapidly changing conditions.

6. Sportsman's organizations should be invited to assist in conservation work, and the general public should be kept informed about the work being done by Government bodies in this field in order to promote interest and support legislation.

Statistics Pertaining to the Sport Fishery in Nova Scotia

The following statistical information has been obtained from Department of Fisheries files at Maritime Area Headquarters Office, Halifax, Nova Scotia. The data compiled from monthly angling reports submitted by Fisheries Officers in charge of a county or section of a county in Nova Scotia. Totals represent the known catch and fishing efforts as reported, but do not purport to be actual total catches or actual fishing effort, because the total number of anglers is unknown. For this reason the figures shown may be used only as a guide to the success ratio of anglers in various parts of the province.

Statistics for the year 1957

	Rod Days	No. of Fish	Est. Wgt. lbs.
Speckled or Brook Trout	213,074	192,614	107,270
Brown Trout	3,673	3,023	4,567
Rainbow Trout	3,460	1,640	1,423
Grey or Lake Trout	1,392	782	1,589
Small Mouth Black Bass	606	551	460
Striped Bass	13,078	4,617	11,054
Tuna	550	21	11,116

Licenses sold to Non-Resident Anglers

(1956) 1729 (1957) 1646 (1958) 1718

Gross Value of Sport Fishing

The following is offered as a considered guess by the writer in order to promote discussion and inquiry. He would be happy to receive information that would prove the guesswork right or wrong.

Estimated number of Anglers in Nova Scotia 50,000 1:15

Average number of days (R.D.)spent fishing 5 250,000RD
by each Angler each year

Average cost to Angler per season -

Fishing gear	$ 5.00	
Transportation		
50 miles @ 8¢	4.00	
Food, refreshment		
etc.	5.00	
Other	1.00	$ 15.00
Cost per day		3.00

Average number of fish caught per day:-

Trout (1) Av. Wgt. ½ lb. Ave. Cost $6.00 per lb.

Potential total 125,000 lbs @ $6.00 $750,000

Perch (12) Av. Wgt. 4 ozs. Av. Cost $1.00 per lb.

Potential total 750,000 lbs @ $1.00 $750,000

Small Mouth (1) Av. Wgt. 1 lb. Av. cost $3.00 per lb.
Black Bass Potential total 250,000 lbs @$3.00 $750,000

Striped Bass (.02) Av. Wgt. 5 lbs. Av. cost
$3.00 lb.
Potential total 250,000 lbs
@ $3.00 $750,000

Sea Fish 10 lbs. Mackerel, Pollock, Flounder, etc.
Cost 10 lbs. per R.D. @ 30¢ per lb.
Potential total 50,000 x 50 - 2,500,000
lbs. @ 30¢ per lb. $750,000

Tuna - Check with Dept. Trade and Industry.

Fishing License Sales as at July 31, 1963

County	Resident	Non-resident
	$2.00	$5.00
Annapolis	14	1
Antigonish	3	1
Colchester	16	3
Cumberland		2
Guysboro	99	31
Halifax	417	22
Hants	26	
Kings	3	
Lunenburg	260	23
Pictou	51	7
Queens	201	28
Shelburne	5	1
Yarmouth	13	4
Cape Breton	93	
Inverness	52	31
Victoria	20	5
	1,273	159

Total money collected from sale of licenses - $3,341.00

WILD FUR

By: Neil van Nostrand[1]

Economic Value

Between 1933 and 1950 the average annual value of trapped furs was 323 thousand dollars.* The period was characterized by widely fluctuating fur prices and wild fur production of the most important species varied tremendously. Muskrat, however, stood out as the most important fur bearer, both in total numbers taken and total value of pelts sold. The 1,151 thousand muskrat pelts taken would have been valued between one and two million dollars. The 888 thousand squirrel pelts taken over the same period were second in numbers, but would probably have been valued at less than half a million dollars. During this period, the three open seasons on beaver yielded 18,503 pelts valued at more than half a million dollars. Weasel was third in production, but the 74 thousand pelts taken would have been worth much less than the first three species. Wild mink were fourth in production, with 46 thousand pelts taken, value at approximately half a million dollars. Red fox, raccoon, wildcat, otter, lynx, bear and skunk remained at lower levels of production and lower total values than the top four species.

The muskrat kill declined steadily between 1953 and 1959 and in 1962 reached the lowest point since 1933. As a result, beavers replaced muskrats as the most valuable fur bearer in the province. The kill of muskrats dropped from a peak of 57,185 in 1953 to a low of 12,317 in 1962 and had a total value of approximately 628 thousand dollars for

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1 - Wildlife Biologist, Nova Scotia Department of Lands and Forests.

* - Annual reports of the Nova Scotia Department of Lands and Forests.

418,657 pelts exported during this period. In comparison, the 51,517 beaver pelts taken would have been valued at about one million dollars.

During the most recent three years, 1960 to 1962 inclusive, the contribution of wild fur value to the trapper was made up as follows: beaver, 45 per cent; muskrat, 17 per cent; mink, 14 per cent; and all other wild furs combined, 24 per cent.

Problems

Low Fur Prices

As a result of a widespread shortage of luxury items during and for a few years after the Second World War, most furs were in good demand and brought high prices. Increasing competition from other luxury items, the advent of new products including synthetic furs which become available in ever increasing quantities and varities, and changing fashions, began to decrease the demand for wild furs. Thus, during the 1950's fur prices began a general downward trend which was continued to the present.

In addition to the marked decline in fur prices, the devaluation of the wild fur resources, along with the current high wage rate and job opportunity, and the advent of unemployment insurance, has resulted in greatly reduced incentive for trappers to trap for money alone (many trap for "sport"). These factors largely account for current relatively low harvests of many of our wild fur species, such as muskrat, mink, weasel, squirrel, fox, raccoon and wildcat.

Greater demand for furs and higher prices could be realized through fur promotion, improved marketing, standardization of fur quality and reduction of damage to pelts caused by improper preparation and handling of pelts by trappers.

Improper preparation and handling of pelts

Due to a combination of favorable climate and suitable habitat, Nova Scotia produces fur bearing animals

with high quality pelts. In spite of this fact, far too many pelts exported from Nova Scotia are devalued due to improper preparation and handling by trappers. While the trapper himself takes the greatest loss for such carelessness, the reputation of Nova Scotia furs as a whole suffers. While extreme preparation of pelts, like those coming from the famous Quebec Beaver Preserves, is not essential for greatest profit, uniformly well prepared pelts definitely command a higher bid and are, therefore, worth more to fur buyer and trapper alike. Poorly prepared pelts invariably are downgraded regardless of fur quality.

A program of trapper education could cut this loss significantly and provide an immediate price increase to the trapper.

Lack of trapper organization and enlightenment

Without direct contact with a representative group of trappers from each region of Nova Scotia, a satisfactory approach or solution to the fur resource problems of the province becomes difficult or impossible. Trappers need to be more aware of the various problems which confront the wild fur industry, in order to get their support in overcoming or counteracting them. Understanding problems is the key to intelligent action. Lack of trapper organizations will result in a lack of any effective action in solving the problems. During 1964 a start was made on forming trapper organizations.

The following are some objectives of trappers' associations:-

(a) To hold annual meetings for trappers to discuss and form united opinion on trapping regulations in order to guide Department of Lands and Forests policy and help to foster good co-operation between the department and the trappers;

(b) To provide a medium exchange of information regarding fur prices and quality, proper pelt pre-

paration and handling, trapping techniques, trappers' supplies, fur research and developments, as well as other topics of mutual interest;

(c) To permit trappers to become acquainted with other trappers and discuss their mutual problems;

(d) To foster a better understanding of the present situation regarding the fur animals themselves and the fur resource in general, in order to stimulate united co-operative action for the benefit of all concerned.

Lack of Research and Management

Inadequate research, particularly on some of our more important fur bearers, such as beaver, mink and otter, results in lack of any sound management program. The important general problems are outlined under suitable headings below:-

(a) Beaver

Perhaps the chief problem in beaver management involves determining the maximum sustained harvests obtainable in each county, and adjusting regulations to best suit the wide variety of beaver populations and other conditions in each county. This is much more of a problem for beaver than the other species for several reasons. Beavers are more easily overtrapped than other species, consequently production of a major fur may be unnecessarily curtailed. On the other hand, underharvesting of a beaver population results in reduction of future carrying capacity through excessive use of choice food supplies. Underharvested populations also cause unnecessary nuisance and damage to property as well as expense to the Department of Lands and Forests in alleviating these nuisance problems.

(b) Experimental trapline (All species)

More information is needed to determine the effect

trapping has on mink and otter populations in particular. There are indications that greater harvest of these species would result in increased productivity which in turn could well result in increased harvests on a sustained yield basis. An experimental trapline, where trapping was carried out by department wardens in the Tobeatic Sanctuary area for example, could accomplish the above objective, as well as provide needed data on fur primeness, and deterioration of fur quality with advancement of the season.

(c) Fur Quality

Some areas of Nova Scotia apparently produce an inherently superior quality fur than do other areas. A study to determine the factors involved could well lead to a method of exploiting this effect, or to a higher recognition of areas producing the best quality fur of each species.

Fur Statistics: collection, analysis and dissemination

The Nova Scotia Department of Lands and Forests has maintained fur statistics on the pelts exported each year, but no data are available on pelts that remain in Nova Scotia. These statistics are vital to any assessment of past, present, and future trends in the fur resource. This work should be continued and, where necessary, expanded in future. For example, routine collection of statistics on the sizes of beaver pelts taken each year would provide valuable records with which to compare future data in evaluating productivity of beaver populations. The need for additional data collection may become evident as research work progresses on beaver and other species. It is particularly important at this time that it be made mandatory that one lower jawbone from each beaver trapped be delivered to the department. This will materially aid in providing much-needed management data. Periodic reports should be made

available to interested trappers, trappers' associations, or others.

Changes in Fur Regulations

While the current general fur regulations are the result of a long period of experience and experimentation, changing conditions and accumulation of information warrant periodic review and revision when necessary. For example, present regulations restrict the trapping of prime weasel pelts to about two weeks, although the pelts remain prime for at least three months. A longer season would not reduce future weasel production. The problem may be best resolved by removing the weasel from the protected list and allow it to be trapped all winter, along with the fox, raccoon and bobcat.

Changes in fur regulations will undoubtedly be requested by trappers' associations from time to time, but these and other requests should pose no serious problem if consequences are carefully thought out and changes made gradually in line with proper management of the resource.

Parasites and Diseases

The parasites and diseases of Nova Scotia's fur bearers have never been adequately studied in the past. Knowledge of this aspect of their biology is basic to a sound management program.

Progress to date

(1) Beaver Study

A province-wide beaver study was undertaken by the Department of Land and Forests in 1961. The primary objective is to manage this important fur bearer to the best advantage of all concerned.

(2) Trappers' Association

The department has encouraged trappers to form their own county associations with the view that organized trapper support is essential to the solution of some of the problems of the wild fur

resource. To date, ten county trappers' associations have been formed in eight counties.

(3) Canadian Fur Council

A Canadian Fur Council, made up of representatives from each province, has been formed and holds annual meetings to discuss and attempt to deal with fur problems relative to the entire Canadian wild fur resource.

Future Potential

Under proper management, beaver production can be maintained indefinitely at present levels. It may even be increased. The harvest of muskrats is currently at a very low ebb, due chiefly to present low prices, although the current population level may also be below average. Both these causes are believed to be temporary and future harvests of muskrats would be expected to increase to higher levels than at present, expecially if prices increase.

The harvest of wild mink fluctuates from one year to the next, probably as a result of changes in population levels and trapping pressure. The current low level of harvest may be chiefly as a result of light trapping pressure due to relatively low prices. Since no studies of mink have been made in this province, research into the problem will doubtless provide useful information which might lead to more uniform harvests.

Otter harvests have been relatively consistent, but low for the past thirty years, with a slightly increasing trend in recent years. Otter research in Nova Scotia could well indicate a method of realizing a greater harvest of our currently most valued fur bearer.

Squirrels and weasels could be taken in considerable quantities if the price were high enough to provide the necessary incentive to trap more.

Fox, raccoon, wildcat and bear are not protected and are currently hunted with dogs (except bear), more for

sport than for the value of their pelt. While higher fur prices would increase the harvest, these animals probably have a greater future potential for sport than for their fur.

Lynx, while providing valuable fur, are found mainly on Cape Breton Island, where a few are harvested each year. No appreciable change is anticipated in the future.

Skunk, a relatively minor fur bearer restricted to the eastern part of the mainland, could well re-occupy the entire mainland. However, unless the value of its pelt rises, it will add little to the value of the fur resource.

Recommendations

The proposed recommendations involve relatively little or more expenditure than that already being bugeted for at the present time. However, the recommendations do provide guide lines along which to direct fur bearer management which has already begun in Nova Scotia. This currently involves one wildlife biologist nearly full time, plus a number of permanent forest rangers, and others for seasonal or part-time assistance.

(1) Research and Management

At the present time the beaver is the only fur bearer under intensive research. Beaver studies currently are divided into 11 inter-related projects covering the study of basic biology (this work is being done both in sanctuaries and other areas of the province); the effect of trapping techniques; habitat; parasites; and the effect of beaver on other wildlife. A start has been made on the study of other fur bearers and the fur quality of all fur bearers. The beaver projects are carefully outlined for a ten-year period and are available for specific reference, but are not included here. It is recommended that these projects be supported and continued.

(2) Trappers' Associations

Trappers' Associations have been initiated in eight counties following department-sponsored trappers' meetings. In view of the interest shown at these meetings, it is recommended that more meetings be sponsored in other counties. It is further recommended that the department personnel continue to encourage such meetings and lend their support wherever possible, but without taking the vital initiative away from the trappers themselves.

(3) Canadian Fur Council

The Canadian Fur Council, made up of representatives of each province in Canada, was formed to deal with fur interests on a national scale. It is, therefore, recommended that this province continue its representation and support, and play its part in carrying out the projects undertaken by this organization. It is recommended that the Director of Conservation be appointed to represent Nova Scotia.

(4) Collection and Analysis of Fur Statistics

In recognition of the vital importance of fur statistics in managing the fur resource, it is recommended that accurate information regarding furs trapped and exported, license sales, fur prices, etc., be compiled, analysed and published for interested parties. It is further recommended that a License for Trappers be established to aid in providing needed statistics.

(5) Project Results

From time to time results of projects will be analysed and reports prepared. It is recommended that certain of these be made available in mimeographed form for distribution on request.

(6) Meetings with other Organizations

Contact with other organizations, provinces and individuals working in the fur resource field is necessary to keep abreast of current progress and developments. It is, therefore, recommended that meetings of this nature be attended by Nova Scotia representatives.

RANCH FUR

By: Charles G. Wright[1]

Year	Ranchers	Breeders	Production	Pelts	Value $	Average Value/Pelt $
1954	62	N.A.	20,498	18,804	274,504	14.59
1955	64	9,808	23,975	21,521	306,677	14.25
1956	63	11,335	29,530	28,595	281,137	9.83
1957	76	11,743	28,066	25,614	325,929	12.72
1958	82	13,304	32,416	29,079	288,674	13.37
1959	83	15,844	36,587	32,772	476,414	14.54
1960	88	18,543	48,196	43,815	525,994	12.00
1961	96	23,033	57,424	52,859	762,647	14.43
1962	90	25,280	63,590	56,118	900,193	16.04
1963	98	28,369	80,168	72,040	1,242,486	17.25
1964	110	33,767	88,526	78,770	1,154,327	14.65

Source: DBS 23-208

Recent Growth in Pelt Production: Approximately 15 per cent per year.

Potential: Good prospects for increased production.

Obstacles, Past: Below average returns, due to lack of good stock, backward methods of feeding and housing and careless handling of pelts at market time.

Present: Still breeding stock (to some extent). Lack of financial backing in many cases. Insufficient field supervision and educational program.

Future: Probable decline in return due to a large increase in world production. Feed supply in some areas. Increased disease risk and vaccination program.

1 - Secretary-Treasurer, Nova Scotia Mink Breeders Association.

Policy: Continued improvement in quality and size of breeding stock.
More general up to date methods in ranch management.
Better educational program.
Financial support for ranchers or feed supply plants, wishing to expand their operations.
A moderate and carefully considered expansion program, working with our own established industry first.

Chinchilla

Year	Farms	Breeders	Pelts	Value $	Value/Pelt $
1958	23	482	74	999	13.50
1959	19	516	63	885	14.05
1960	18	562	91	1,183	13.00
1961	18	698	158	2,130	13.48
1962	14	772	249	3,461	13.90
1963	22	919	256	3,988	15.58
1964	26	1,118	193	2,561	13.27

Recent Growth in Pelt Production: Approximately 25 per cent per year (up until 1963).

Potential: Excellent prospects for increased production.

Obstacles, Past: Chiefly a promotion of livestock. Undeveloped market for pelts.
Production problems.
Minor health problems.

Future outlook: Good. Established market for pelts at reasonable margin of profit.
Improved methods of handling increasing production.
Feed no problem.

Policy: Same as recommended for mink

Year	Farms	Pelts	Value
		Fox	
1960	2	86	$860.00
1961	2	68	680.00
		The fox farming industry is at a very low ebb and little sign of improvement in the forseeable future.	
		Nutria	
1960	2		
1961	2	No production listed.	

The greatest obstacle to growth of the fur farming industry in this province today, is the problem of financing.

In view of the support program carried on in other industries, by the Provincial Government, it would seem there is need for a similar program in this field. The matter of Government backed loans has been discussed at some length by the fur breeders, and it is their feeling that the industry would expand very quickly if financial help were made available.

Roughly speaking, a mink rancher with an established heard could expand with an investment of $50.00 per breeder female wintered, with an expected return of $20.00, over and above feed costs.

200 breeders on this basis would return $4000.00.

400 breeders on this basis would return $8000.00.

Depreciation and labor costs vary somewhat but would still leave a margin of profit.

According to Landers Chinchilla Farms, Smiths Cove, 160 breeder females with an average production of 2

kits at present values would return the same amount, $8000.00, with a profit of approximately $6000.00.

The above figures, while only approximately accurate, do represent, I believe, a reasonable picture of the possibilities of fur farming in this province.

In view of the statistics and information in the above report, the mink and chinchilla breeders wish to present the following resolutions for the consideration of the Provincial Government.

Resolutions

Respectfully submitted to the Nova Scotia Government, by the Nova Scotia Mink Breeders Association and Chinchilla Breeders, through the Voluntary Economic Planning Council, Fur, Fish and Game Segment.

1 That "Fur Farming" be placed under the Department of Agriculture.

2 That financial support be provided in the form of long term loans, as in other types of farming, and to this end:
That part XIX, Section 204, (b), of the Agriculture and Marketing Act, be amended to read as follows:
"Farm" means an area of land suitable for agricultural purposes, of not less than twenty acres or in the case of Fur Farming, an area of land of suitable location and drainage of not less than one acre.

3 That steps be taken to include on the staff of the Agricultural College, Truro, a competent specialist in "Fur Farming", to assist the industry in this province, with suitable courses and short courses included in the cirriculum of the College.

4 That encouragement and assistance be provided for Veterinarians in ranching areas of the province, to attend special courses in this field at Ontario Veterinary College, Guelph, Ontario.

5 That until such time as the above resolution be adopted, the Provincial Government increase its grants to the fur breeder associations, by $2000.00 per year.

MAJOR GAME SANCTUARIES

By: Dr. D. G. Dodds[1]

Introduction

In Nova Scotia there are four game sanctuaries, comprising in total some 470 square miles of wilderness or semi-wilderness area. There are in addition five minor sanctuaries affording selective protection for some species; as well as three federal bird sanctuaries and two National Parks. A list is provided in Appendix A. The major game sanctuaries are the Tobeatic, comprising 190 square miles, in Queens, Shelburne, Yarmouth and Digby Counties; Liscomb, comprising 175 square miles, in Halifax and Guysborough Counties, and the Chignecto, comprising 85 square miles in Cumberland County.

A fourth sanctuary at Waverley is much smaller, embracing 12,909 acres.

This report is concerned primarily with these four sanctuaries. Of the remainder, most are insignificantly small, or specialized; and control of the National Park areas does not lie within provincial authority.

Present Policy is Based on a Fallacy

The original thinking behind establishment of large scale sanctuary areas was that large protected areas would allow game species to increase unimpeded by man. The animals would then move out to populate the adjacent countryside.

For terrestrial game species and furbearers, this is not true because:

1. The natural mobility of none of the species concerned and normal home range of none of the species concerned permit such spread and increase;
2. There normally occurs for most species a biological increase beyond the carrying capacity of

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[1] - Professor of Wildlife Biology, Acadia University

the range, followed by wholesale death from starvation or disease, representing waste of an unharvested resource;

3 Fluctuating species such as grouse and snowshoe hare have even more limited home-range areas. Since sanctuary inaugurations in Nova Scotia, untold millions have perished naturally and peak populations have crested and re-crested without being cropped;

4 Game harvesting in the sanctuaries should be controlled and can be both popular and profitable.

For these reasons a new policy relative to these sanctuaries is clearly required in order to realize the maximum economic and other benefits from these large areas comprising more than one-fiftieth of the whole province.

A change of policy is all the more urgent and appropriate at this time because of the proposed withdrawal of at least 145 square miles from provincial control and management for the establishment of the national park in the Kejimkujik area.

The Tobeatic Sanctuary

The area is generally of low productivity, although good forest growth rates are found on the southern portion of the sanctuary.

A major portion of the sanctuary is brush and fire barren. This is the type of land which may be of less use to other resource management, yet which might produce a return in wildlife. Experimental projects in this type of habitat could prove of considerable value.

The Tobeatic provides excellent trout fishing for a limited number of anglers who gain access to the area's waters. If the sanctuary were opened to all sportsmen by road access and water access routes, it is likely that the present trout producing waters would decline under the excessive pressure.

The excessively large number of lakes in the sanctuary provide great possibilities for fish management at various levels. In fishery management we doubtless have the greatest possibilities for increasing the recreational resources of the Tobeatic.

For many species (deer, grouse, hare) long term data relative to spring breeding populations and productivity will provide information which may be of value for the management of more extensive portions of Nova Scotia, but primarily for the western half of the mainland.

A present beaver research program is providing important data from the Tobeatic Sanctuary. This program should be continued.

The sanctuary area under an experimental management program would provide possibilities for intensive research on several species, which is not now possible.

The Nova Scotia Department of Lands and Forests staff in the area knows the sanctuary extremely well. These men are necessary to operate registration stations and carry out planned projects.

Two considerations relative to access are: (1) the position of the Bowaters Mersey Paper Co., and (2) a manner for control of sportsmen's numbers (particularly fishermen).

Recommendations for the Tobeatic Sanctuary

1 That the Tobeatic Sanctuary be converted to an experimental game management area with boundaries to remain unchanged.

2 That as an experimental game management area hunting, fishing and trapping seasons and bag limits, numbers of hunters, fishermen and trappers and public access to the area shall all remain under control of the Nova Scotia Department of Lands and Forests.

3 That an agreement should, if possible, be made

with Bowaters Mersey Paper Co. Ltd. to provide controlled access on Mersey roads for hunting and trapping only, but not for fishing.

4 That legislation should be passed to secure the control envisaged in 1 and 2 above.

5 That such legislation and game management activities by the Department should not prejudice the present ability of Bowaters Mersey Paper Co. Ltd. to protect its timber limits or to conduct all necessary operations in relation thereto.

Liscomb and Chignecto Sanctuaries

These areas are composed largely of timber limits. The Chignecto Sanctuary is exclusively on Crown land but the bulk of the land in Liscomb Sanctuary is privately owned. Forest management is practised intensively in Chignecto, and it is practised relative to harvesting and fire protection in Liscomb.

In both areas game populations have been observed to rise and crash in the well-known cyclical pattern which results in forest destruction and waste of game.

Recommendations for the Chignecto and Liscomb Sanctuaries

1 That these areas cease to be sanctuaries and be converted to game management areas.

2 That as game management areas hunting, fishing and trapping seasons and bag limits, number of hunters, fishermen and trappers and access to the areas should remain under control of the Nova Scotia Department of Lands and Forests.

3 That legislation should be passed to secure the control envisaged in 1 and 2 above.

4 That neither legislation nor game management practices should prejudice the present ability of timber limit owners in Liscomb to protect their limits or conduct all necessary operations in relation thereto.

Waverley Sanctuary

Past fire damage has left large areas of barren and rocks. There is some forest regeneration on burned over areas, but most of the predominantly granite area is so poor and barren that it ranks low in both forest and game production.

The sanctuary is close to Nova Scotia's main centre of population, and its chief potential value is considered to be as a recreational area providing camping sites for Boy Scouts, picnic area, boating, canoeing and space for allied activities.

Recommendations for Waverley Sanctuary

1 That the present status of Waverley Sanctuary remain unchanged.

General

The expected costs of the recommendations in this report will be very small or non-existent. The expected benefits will include more recreational opportunities as well as greater and more effective production and harvesting of wildfire resources, with the possibility of extra direct revenue to the province through sale of licenses and royalties.

Appendix A Provincial Sanctuaries

Name of Game Sanctuary	Location in Counties	Area by Acres	Sq. Miles
Waverley	Halifax	12,909 ac.	
Liscomb	Halifax & Guysborough		175
Tobeatic	Queens, Shelburne Yarmouth & Digby		190
Chignecto	Cumberland		85
Blandford (Game Birds)	Lunenburg	550 ac.	
Sunnybrae	Pictou	1,218 ac.	
Melbourne Lake	Yarmouth	60 ac.	
Brule Point	Colchester	200 ac.	

Name of Game Sanctuary	Location in Counties	Area by Acres	Sq. Miles
Debert	Colchester	665 ac.	
	Federal Parks and Sanctuaries		
Cape Breton National Park	Inverness & Victoria	249,600	390
Port Joli Bird Sanctuary	Queens & Shelburne (includes Port Joli Harbour, Port Hebert Harbour & Tidal Waters at the mouth of Sable River		
Kentville Bird Sanctuary	Kings		
Amherst Point Bird Sanctuary	Cumberland	1,350	
Round Lake Bird Sanctuary	Cumberland	?	
National Park Western	Queens		
Nova Scotia (proposed)	Annapolis & Digby	88,000	

LICENSES

Editorial Board

Guiding Principles Regarding License Structure

1 A license held for the purpose of permitting the shooting, catching, or trapping suggests that the pursuit or taking of wildlife constitutes a privilege rather than a right. We are individually using a resource belonging to every citizen and as users should help maintain the resource.

2 Although it is true that for some species, management by regulatory means is not biologically sound, however, for many species, regulatory management is important. To make sound regulations there must be biological data and it costs money to obtain these data. As the regulations are established for the benefit of sportsmen (as users) to a greater degree than the person interested in esthetics only, it is reasonable and proper that the sportsman should help pay the necessary costs. As human populations grow and land-use changes continue, the need for regulatory management and the data to support such management will also grow.

3 With many species, environmental management is desirable now and will become imperative in the future. It costs money to acquire and develop habitat and it costs money to carry out research to obtain data on environmental improvement techniques, in line with other proper land uses. It again seems reasonable that the users of the resource should contribute to management and research in this instance.

4 Licenses enhance the value of the animal. Establish any protective measure over an animal or an area and that animal or area becomes more desirable to the public. Enhancing values may serve to reduce

improper behavior in relation to both wildlife and the land.

5 Licenses are an enforcement aid. Placing licenses on certain species provides the enforcement officers with an opening in his approach to the sportsman and assists in his public relations efforts.

Economic Aspects of Licenses

1 Resident fees should be low enough so that the burden on the sportsman is not excessive, yet high enough to provide reasonable funds for administration, management and improvement, as well as research and enforcement.

2 License fees for species needing excessive regulatory protection should be higher than for other species in order to enhance the trophy value of the animal, afford greater protection for the animal through reducing the numbers of hunters, and providing funds for management.

3 License fees for non-residents should generally be higher than for residents as the non-resident is paying for the privilege of pursuing resources belonging to people of a jurisdiction other than the one where he resides.

4 However, non-resident fees should be low enough to encourage non-resident hunting and fishing and non-resident spending in relation to all game and fish species not requiring excessive protection.

5 In the case of species requiring great protection, non-resident licenses fees should be made very high in cost or not available at all.

6 Under any wildlife act, "non-residents" and "residents" should be defined without prejudice to any national or religious group.

7 Complimentary licenses should be restricted but available in limited numbers to non-residents who

have given particular service, worthy of recognition, to the province.

Suggestions for a Licensing System for Nova Scotia

Angling License

1 A Rod License is not now required. A resident rod license for all fresh waters should be instituted. It should cost one dollar and apply to all persons 14 years of age and over.

2 A non-resident season rod license for sport fish other than in scheduled waters should be set for a fee of five dollars. (Should such a license be required for salt water fishing in Nova Scotia waters?)

3 A non-resident license for scheduled waters should be established for a fee of 10 dollars per season or five dollars for a seven-day period.

4 A non-resident family license to include wife and children under the age of 18 for sport fishing in other than scheduled waters should be available for a seven-day period also, for a fee of approximately six dollars.

In regard to our salmon resource, we do not have as much to offer as New Brunswick or Newfoundland, yet it is unlikely that non-resident fishing pressure would adversely affect our fishery.

In addition to the licenses suggested, a fish propagation license should be considered for commercial fresh water enterprises.

Hunting License

1 A small game license is not now required. A general small game license covering pheasant, grouse, Hungarian partridge, waterfowl, snipe, woodcock, rabbits, squirrels, wildcat, fox, vermin (crows) and raccoon should be instituted. It is suggested that its cost for residents be two dollars and

for non-residents, 20 dollars.

2 A non-resident woodcock and grouse license should be available for 25 dollars. (The existing license includes only woodcock and is 25 dollars).

3 A non-resident small game license (excluding woodcock and grouse) should be available for 15 dollars. (The existing license is 15 dollars and includes grouse but not woodcock).

4 There should be no special pheasant license.

5 There should be a resident Big Game License to include deer and bear and the fee should be four dollars, regardless of seasons and bag limits.

6 There should be a resident combination big game and small game license for five dollars.

7 The present non-resident big game license (includes deer and bear) should be reduces from 40 dollars to 30 dollars to compete more successfully with New Brunswick.

8 The moose license (resident only) during the next open season should be established at 25 dollars in view of the almost seven thousand applicants in 1964 and the high hunter success rates.

Trapping License

1 A trapper's license should be made available covering all fur bearers except beaver and the fee should be one dollar for residents. The non-resident trapper's license should exclude beaver and be left at 50 dollars.

2 No non-resident beaver license should be available.

3 A resident beaver license should be required (to qualify the applicant must also purchase the general trapper's license at one dollar) for a fee of one dollar (now two dollars).

4 Resident buyers license to remain at 25 dollars.

5 Resident hide buyers license to remain at one dollar.

6 Non-resident hide and pelt buyers license to remain at 100 dollars.

Other Licenses

1 Guide's License (resident only) should remain at two dollars.

2 License fee to shoot on a pheasant preserve should be one dollar.

3 A Game Farmer's license for all commercial enterprises should be instituted for a fee of five dollars. The non-commercial game farmer's permit should still be available at no cost.

4 Pheasant Preserve license fees... At present the cost of a license for a farmer's pheasant preserve is 25 dollars. The cost of a club or private preserve license is 100 dollars. It is recommended that no change be made.

5 Fur Farming permit - It is recommended that ranch fur farming be placed under the jurisdiction of the Department of Agriculture.

6 Taxidermist's license to remain at five dollars.

Additional

Under Part III, Section 82 (a), only a British subject can become a resident of Nova Scotia regardless of how long a non-British subject resides in the province. Non-British subject should become entitled to resident hunting and fishing privileges after dwelling here for 12 months (as in Newfoundland) and British subjects from other provinces or countries after a period of six months.

The additional appendices list license structures or parts of such programs for several provinces and states.

Appendices - License Structures

Newfoundland

- Fishing			Income
Salmon	- Resident	)	$66,468.60
	Non-Resident - Season	)	
	14 day - 1 day	)	
Trout	- Non-Resident - Season	)	
	Short period	)	
Small Game	- Resident	)	34,052.90
	Non-Resident	)	
Big Game	- Bear - Resident		
	Non-Resident		
	- Caribou - Resident	)	211,480.75
	Non-Resident	)	
	- Moose - Resident	)	
	Non-Resident	)	
Trapper's License			728.53
Guide License			3,641.72
Fur Dealer's License)			
Fur Farm License)			179.00

Non-Resident trout license - $5.00 season.

Note: Moose non-resident $75.00, Resident $10.00; Salmon Resident $5.00, no-rod license for resident; non-resident salmon $30.00 season, $20.00, 14 day, $5.00/day, small game resident $2.00.
Complimentary License may be issued by certain senior members of Government.

New Brunswick

- Fishing

Salmon, salmon and trout

- Non Resident - season and 7 day

Sport Fish (other than salmon)

- Non-Resident

3-day tourist license - Reserve waters -

- Resident

Non-Resident

Refuge and unleased water permits -

- Resident (this is a regular resident rod license)

- Hunting

Deer and Game Birds - Non-Resident

Game Birds - Non-Resident

Complimentary Licenses

Deer and Game Birds - Resident

Island Deer and Game Birds - (a zone)

Moose Licenses

Minor's Hunting Licenses (Game Birds)

Other -

Fur, Hide and Taxidermist Licenses

Resident Fur Dealers' Licenses ($25.00)

Non-Resident Fur Dealers' License ($100.00)

Resident Hide Dealers' License ($5.00)

Non-Resident Hide Dealers' License ($25.00)

Taxidermist Licenses

Pheasant Shooting Preserve Licenses

Resident Trapper's License ($1.00)

Non-Resident Trapper's License ($100.00)

Non-Resident license (all fish) 1950 - $16.00 (Family)

7 day - $ 5.00 (Family)

Prince Edward Island

- Hunting

Resident $1.00

Residents of N.S., N.B., Nfld. - $25.00

1963 Other Non-Resident - $35.00

(Grouse, rabbits and migratory birds)

All fur bearers included under hunting license structure now under review.

Complimentary Licenses

New York - 1962 - 63

Resident -

Combination hunting and fishing	$5.75 (Small game)
Hunting only	3.25 (Small game)
Fishing only	3.25
Big Game (Deer and bear)	3.25
Archery (deer and bear)	5.25
Trapping	3.25

Non-Resident -

Hunting (Small game)	10.75
Big Game (deer and bear)	10.00
Archery (deer and bear)	10.00
Trapping	25.00
Fishing	5.00
6-day fishing	4.25

Must have both general hunting license plus big game license for big game.

Migratory Game Bird Stamp required plus general hunting license to hunt waterfowl.

Additional licenses re fur dealers, taxidermy, etc., not included. Other Divisions of Dept. handle boating and related aspects.

Maine - 1959	1958 - 1959 No. of Licenses	1958 - 1959 Amount
Resident Combination Licenses	39,685	198,425.00
Resident Hunting Licenses	109,985	274,962.50
Resident Fishing Licenses	104,315	260,787.50
Resident Archery Licenses	613	2,452.00
Non-Resident Deer Hunting Licenses	23,091	577,280.25
Non-Resident Bird Hunting Licenses	2,224	22,240.00
Non-Resident Exch. Bird for Deer	437	6,555.00
Non-Resident Jr. Bird Licenses	91	455.00
Non-Resident Archery Licenses	111	1,110.00
Non-Resident Season Fishing Licenses	12,345	104,932.50
Non-Resident 15-day Fishing Licenses	28,180	154,990.00
Three-Day Fishing Licenses	24,308	85,078.00
Non-Resident Exch. Fishing Licenses	1,043	3,129.00
Non-Resident Jr. Fishing Licenses	9,586	19,172.00
Fish. License for Boys & Girls Camps	24	1,150.00
Resident Guide License	1,564	13,294.00
Resident Guide Replacement License	505	2,354.00
Non-Resident Guide License	25	1,250.00
Resident Trapping License - Statewide	982	9,820.00
Resident Trapping License - Organized	442	2,210.00
Resident Trapping License - Exchange	1	5.00

	1958 - 1959 No. of Licenses	1958 - 1959 Amount
Non-Resident Trapping License	1	200.00
Resident Taxidermist License	20	100.00
Camp Proprietor's License	169	845.00
Game and Fur Farm License	67	670.00
State Fur Buyers' License	18	450.00
Non-Resident Fur Buyers' License	1	50.00
State Deer Skin Dealers' License	63	1,575.00
Live Bait Dealers' License	265	1,325.00
Roadside Menagerie License	6	300.00
Resident Deer Transportation License	63	1,260.00
Beaver Stamping Fees	6,818	6,818.00
Fisher Stamping Fees	223	111.50
Dog Training Area Licenses	17	206.00
Registration of Boats	6,645	6,645.00
Boat Operators' Licenses	45	45.00
Eel Permits	-	649.27

Vermont - 1958

Non-Resident -	Hunting (all game)	$ 15.00
	Fishing	5.25
	Combination	18.00
	14-day fishing	3.50
	Trapping	50.00
Plus 3-day fishing		
Resident -	Fishing	1.75
	Trapping	1.75
	Hunting	2.25
	Combination	3.50
Fur Buyer -	Resident	2.00
	Non-Resident	50.00

Deer - Bow and arrow (addition to hunting license)

- Resicent	$ 1.00
Non-Resident	3.50
Game Propagator's License	2.00

Migratory Bird Stamp also required in addition to hunting license for hunting all migratory birds.

Ontario - 1954

Resident

Deer	$ 5.00
Farmer's Deer (within county)	2.00
Moose	10.00
Trapping (any British subject)	5.00
Air Guns	1.00
Organized Camps (4 or more)	5.00

Non-Resident

Hunting (except deer and moose)	$21.00
Hunting (except moose)	36.00
Hunting (all game)	101.00
Spring Bear	5.25
Wolves	5.25

Residents and Non-Residents

Hunting dog license	$ 2.00
Raccoon License	2.00 (res. only)
Raccoon Dog license	1.00
Cold storage of game	3.00
Game Dealers	10.00 (cities)
	5.00 (towns)
	2.00 (elsewhere)

Sales or possession in Hotels, Restaurants, Clubs - Same as above.

	(Fur Dealers (store)	$25.00	(British
	(		Subject)
	(Fur Dealers (travelling)	100.00	
	(Non-British subject but a		
Fur Dealers	(resident	200.00	
	(non-resident	200.00	
	(British subject wholesale		
	(license	100.00	
	(British subject restricted	1.00	
	Tanner's License	$10.00	
	Outfitters and tourists camps -		
	resident	10.00	
	non-resident	25.00	

Also turtle trapping, frog license, removal of fish for stocking license, pheasant propagation and quail propagation licenses. Permission to use poison licenses, game dealer's license, etc.

Non-Resident angling	$ 6.50
Angling for Residents of Manitoba	3.25
Non-Resident Angling for member of organized camp	
Resident Angling for Provincial Parks	$ 3.25
Resident angling for members of organized camp in park	
Bait Licenses	
Minnow trap licenses	

Quebec - 1954

- Hunting

Resident

All game (except bear, moose, deer, pheasant, fur bearers)	$ 1.00
Moose only	10.50

Deer only	$ 2.10
Pheasant only	1.10
Fur bearers (hunt and trap)	2.10

Non-Residents holding leases, club privileges

All game (except bear, moose, deer, pheasant, fur bearers)	$ 5.25
Moose only	76.00
Deer only	15.50
Pheasant only	1.10
Hunt and trap fur bearers	202.00

Other Non-Residents

All game (except bear, moose, deer, pheasant, fur bearers)	$10.50
Moose only	101.00
Deer only	25.50
Pheasant only	1.10
Fur bearers (hunt and trap)	202.00

- Angling

Residents (Rod License)	$ 1.10
Non-Residents (Atlantic Salmon & other fish)	
Season -	$15.50
3-day -	5.25
All fish except Atlantic Salmon	5.25

(All non-resident licenses are family licenses valid for wife and children under 18 years of age)

POLLUTION

By: George C. Baker[1]

The Nova Scotia Department of Public Health has pollution data on only two rivers in the province, the Annapolis and Cornwallis, both in the Annapolis Valley. Both exhibit a high degree of pollution and gross contamination.

Highlights of the Annapolis River study show fairly low levels of pollution in the head waters, rising as sewage loads and industrial wastes are discharged in succession down the river. Of the upper estuary the report states: "Although this section of river is affected by tides, the scouring action does not appear to be sufficient to prevent accumulation of sludge banks, and in time these banks will become physically objectionable through the formation of floating sludge masses and offensive odors."

And again of contamination: "This high coliform load continues down stream to below Bridgetown, averaging 13,100 m.p.n., a tidal stretch of river." And again: "The high incidence of coliform bacteria indicates the Annapolis River to be grossly contaminated by sewage discharges. It also indicates the potential health hazard that is incurred by recreational use of the river water."

This is in the 15-mile lake developed by the Maritimes Marshland Rehabilitation Agency, which was going to be such a recreational asset and tourist attraction to Annapolis.

High river temperatures, heavy concentrations of B.O.D. solids and high coliform contamination are associated with improperly maintained sewage treatment tanks, raw sewage wastes and industrial discharges. From one distillery the discharge contains a maximum of 31,500 parts per million of B.O.D. solids, and a contamination count of

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[1] - Editor and Owner of the Kentville Advertiser.

1,100,000. The water temperature is about 42° Centigrade.

On the other hand, activated sludge tanks serving RCAF Station Greenwood, well designed and maintained, are over 97% efficient in reducing the B.O.D. solid content, and the discharge from this source, at B.O.D. five parts per million, is no worse than some natural water.

Without going into detail about findings on the Cornwallis River, it can be said that the situation is equally bad or worse in some stretches, and due to the same causes. One is overload of the Berwick Settling basins by waste from a food-processing plant.

Dr. G. M. Smith, Director, Fundy Health Unit, Department of Public Health, says: "From personal observation and from reports of my inspectors, I know that our lakes are becoming polluted with human waste." Of water pollution he says: "I would hope and expect that the new Water Resources Board would now investigate this problem. The financial aspect of any town attempting to overcome their present unsatisfactory method of sewage disposal, is one that will be difficult to overcome, unless new sources of revenue are made available."

RECREATION

By: Evan S. Lloyd[1]

Definition

In general, recreation may be defined as the constructive and worthwhile use of leisure time. As such it embraces a very wide range of activities, both indoor and outdoor.

However, recreation within the terms of reference of this committee is necessarily restricted to outdoor activities based upon our forest and water resources. Of these, hunting and fishing are treated in detail elsewhere. This section of the report is intended to deal primarily with such resource-based recreations as camping, boating, hiking, driving for pleasure, swimming, picnicking, sightseeing and nature study.

Recreation in General

Nevertheless, certain observations on recreation in general are germane and necessary to provide a background against which any specific form of recreation may be considered.

(A) Recreation is a legitimate form of land use.

(B) With ever-increasing population, and a trend toward shorter work hours, there will be a demand for a wider range of activities to meet the variations of individual tastes and needs for cultural and physical leisure activities.

(C) For the same reason, there will be demands for recreational facilities upon an ever increasing scale.

(D) Management of renewable resources for recreational purposes is now hampered by three broad deficiencies. The first is lack of knowledge concerning the

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[1] - Executive Director, Cape Breton Tourist Association.

potentialities and limitations of the supply of renewable resources, and the present and future character of the demand for their use. The second is inadequacy of knowledge about recreation as a social phenomenon. The third is the inadequacy of present research arrangements.

Economic Value

While the present state of knowledge is quite insufficient to enable a dollar value to be placed on most recreational activities, or on time spent in recreational pursuits, certain estimates of a helpful nature have been made.

The Dominion Bureau of Statistics (DBS) (1) estimates the recreational component to be 3 per cent of the average family budget. But this excludes completely such items as automobiles, general transportation, clothing and foods. Lloyd Brooks, National Parks Branch, Ottawa, in a background paper for the "Resources for Tommorrow" conference (5) argues that a proportion of such expenditures certainly has a recreational purpose, and concludes that 14 per cent is a more realistic figure for the recreational portion of the family budget.

But Brooks points out that disparity of personal income makes it dangerous to generalize upon the regional distribution of recreational expenditures.

Recreation and tourism are closely linked. DBS "Travel between Canada and other Countries", gives the following reasons for United States motor travel to Canada:- Business, 7.6 per cent; Recreation, 67.6 per cent; visiting relatives or friends, 22.9 per cent; others, 1.9 per cent. Although geographical and other factors also operate in the regional distribution of tourist volume, it seems inevitable that the existence or otherwise of recreational opportunity must exert great effect.

Potential

As populations and personal disposable incomes increase, the demand for recreational opportunities, and therefore their value, will increase sharply. One estimate for the United States (2) is a 30-fold increase in visits to more remote vacation sites between 1955 and 1985. Brooks (4) says the increase will be even greater in Canada.

The Importance of Resource-Based Recreation

Wildlife and nature rank high as recreational attractions. The case in relation to hunting and fishing is obvious. Over 670 thousand non-resident fishing licenses and 40 thousand non-resident hunting licenses were issued in provinces where no license is necessary except for provincial parks. Fishing is considered the fourth most absorbing activity for United States tourists to Canada.

But figures from other sources cast another light upon the facts. In 1960, only four per cent of visitors to wildlife refuges in the U.S. hunted. (The proportion is valid for visitors to refuges where this activity is permitted). Another 36 per cent of visitor days were devoted to fishing. The remaining 60 per cent were devoted to the observation and photography of wildlife, often in conjunction with a family picnic, or swimming (3).

If this proportion holds, even approximately, for U.S. visitors to Canada, then opportunities for coming into contact with nature must rank very high in the list of Nova Scotia's possible tourist attractions.

The U.S. Commission on Outdoor Recreation Resources reports the top ten outdoor recreation activities, in order of popularity, are: driving for pleasure, walking, swimming, playing outdoor games or sports, sightseeing, picnicking, bicycling, attending outdoor sports events, fishing and boating. By the turn of the century the top outdoor recreations are expected to be swimming, followed by pleasure driving, walking for pleasure, playing outdoor

games, sightseeing, picnicking, boating, attending outdoor sports events, fishing and bicycling, in that order.

In Nova Scotia these activities might vary, and perhaps include outdoor winter sports, but they can be taken as a rough measure of what may be most demanded in the way of recreation facilities.

It is readily seen from the above that while the field of recreation is not exclusively preoccupied with the use of renewable resources, it does increasingly depend on access to renewable resources. This was one of the conclusions reached by the "Resources of Tomorrow" conference.

A General Approach to Development of Recreational Resources

In view of the importance of recreational resources and the prediction that pressures upon them will increase rapidly in future years (4), there should be a sense of urgency about the preservation of resources still available, the aquisition of others needed, and orderly development of suitable programs for resource use.

Decisions about resources are usually made on grounds that are not primarily recreational, but recreation is legitimately a concern of all who make decisions about renewable resources. Therefore the presence of recreation program people is essential at all stages of planning and developing the use of renewable resources.

To provide a basis for sensible development of recreational resources, the following approach is suggested:

(A) The Nature of Leisure Activities should be thoroughly researched, considering the substantial increase in the volume of leisure becoming available, the wide range of activities required to cater to the individual, and group desires.

(B) As in all economic studies, taking inventory must receive most prominent consideration.

Within this framework there could be four specific categories:

(a) Recreation Land Use Inventory designed to reveal the present extent, location and accessibility of public and private resources for recreational purposes.

(b) Recreation Land Use Capability Inventory designed to reveal the extent and quality of the resource base for varied recreation purposes.

(c) Historic Sites and Objects Inventory.

(d) A Comprehensive Inventory of Program Facilities, including but not limited to museums, zoos, aquariums, botanical gardens, playgrounds and such.

Some Specific Proposals

The following proposals might be worthy of early study and action:

Walking Trails. There is an increasing interest in walking and hiking. Walks on Sunday afternoon or hikes during a vacation are both in need of well marked trails. There are old logging roads that could be marked or routed. These hiking trails do exist and only need a little development. They should be marked to identify them as to long or short routes, not only through woods but along the coast lines. The flora and fauna of the area could be described on plaques. An early start on this program would help materially in creating an interest in the outdoor and ultimately more awareness of the needs of conservation.

Bicycling is most popular and is growing in interest. In co-operation with the Youth Hostel organization, cycling trails could be marked and publicized, and by creating an interest in numerous communities the creation of more hostels could be encouraged.

Swimming is popular and will grow, but there is an urgent need for some form of pollution and garbage control along a number of our beaches if this recreation is to develop freely. As this recreation becomes more popular there may have to be consideration of the need for life-saving teams.

Boating. With the increased interest in boating and trailered boats, it is recommended that a certain number of bulldozed ramps be made at selected locations for launching.

Canoeing is a potential that will develop and routes with overnight camp sites and well marked portages should be researched. Cross-province trips would be of particular interest to a great many of the younger generation if they knew where to go.

While consideration should be given to the boating public, it is also felt that certain lakes and waterways should be closed to motor-operated craft. Motorboats themselves do not in general affect fishing, but in restricted waters they often constitute a nuisance. In great numbers they could change the composition of water and be the cause of phenolic products. Constant invasion of waterfowl habitat by boating parties will eventually drive them away.

Wildlife Park at Shubenacadie

This park has tremendous potential, both educational and recreational. More aggressive promotion and advertising of the park should be considered.

Apart from students, for which the park represents an educational facility, visitors should pay admission. A modest fee would not discourage attendance, but it would provide funds for park promotion, expansion, and other purposes of the Wildlife Conservation Division of the Department of Lands and Forests.

Zoning of Recreational Areas. Land for recreation

close to urban areas should now be zoned and identified as recreational areas. With the growth and expansion of our urban areas it is most desirable that some allocation for recreation spaces close to or within the urban confines should be made. This of course is a clear indication of the overlapping of departmental responsibilities because such considerations must be paramount in town or industrial planning boards if they wish to attract more industries to their communities.

References

1 DBS Consumer Price Index, April, 1961.

2 Clawson, Marion; The Dynamics of Park Demand, R.P.A. Bulletin 94, April, 1960, P. 38.

3 Annual Report, Secretary of the Interior, U.S. Government, 1959, P. 402.

4 Brooks, Lloyd, "The Forces Shaping Demand for Recreation Space in Canada", Resources for Tomorrow, Vol. 2, Page 965.

5 Ibid. P. 961.

RECOMMENDATIONS

The following are those recommendations that were agreed to by the Voluntary Planning Board for inclusion in the First Plan. Following each recommendation, a brief resume is given in regard to the implementation action that has taken place to date.

Recommendation Number 1 - The Provincial Government should immediately begin purchasing fresh and salt marsh areas to ensure preservation of waterfowl.

Action to date - During 1965, 261 acres adjacent to the Missaquash Marsh were purchased for waterfowl preservation purposes.

Recommendation Number 11 - The Provincial Government should encourage and assist Ducks Unlimited and other organizations in the development of these acquired marshes.

Action to date - Ducks Unlimited under agreement with the province has developed the Missaquash by installing control structures to raise the water level.

Recommendation Number 111 - A public education program of reasonable cost should be instituted immediately, designed to foster the interest and co-operation of the general public in wildlife conservation and management.

Action to date - A program is carried on through motion pictures shown by the extension division, newspaper advertisings and through radio and television.

Recommendation Number 1V - Future big-game herd management should be conducted under the direction of game biologists employed by the Nova Scotia Department of Lands and Forests. These biologists should be authorized and enabled to continue studies in all areas under their jurisdiction. All season dates, bag limits and other pertinent big-game regulations should be set in late spring by Order-in-

Council and based on recommendations of wildlife biologists, after sufficient time has elapsed for assessment of the previous season's fall harvest and deer herd wintering success.

Action to date - Program being carried on as recommended.

Recommendation Number V - There should be an experimental, controlled moose season to harvest 100 to 200 moose from central counties. Licenses should be selected by lottery.

Action to date - Season opened in 1964 in Cumberland, Colchester, Pictou and Antigonish Counties with a limit of 400 licenses selected by lottery. In 1966 the opened area will be extended to include Guysborough County and the number of licenses increased to 800.

Recommendation Number VI - Increased emphasis should be given to moose research and herd management.

Action to date - Program being carried out as recommended.

Recommendation Number VII - The bounty on bear should be abolished and this animal classified as big game with appropriate hunting seasons and bag limits.

Action to date - Under an amendment to the Lands and Forests Act in 1966, the bear is now classified as a big game animal with the open season confined to the deer season. Bounties have been discontinued.

Recommendation Number VIII - The Tobeatic Sanctuary boundries should remain unchanged and the Sanctuary connected to an experimental game management area.

Action to date - Tobeatic Sanctuary boundries remain unchanged as recommended.

Recommendation Number IX - The Nova Scotia Department of Lands and Forests should control all hunting and trapping

activities and access to the Tobeatic Sanctuary.

Action to date - Control exercised as recommended.

Recommendation Number X - Agreement should be reached with Bowaters Mersey Paper Company Limited and all other land owners for controlled access to Tobeatic Sanctuary for hunting and trapping.

Action to date - Action awaiting change in regulations.

Recommendation Number XI - Enabling legislation should be enacted to secure the necessary control as envisioned in 16 and 17 above.

Action to date - Held for further study.

Recommendation Number XII - The Chignecto and Liscomb Sanctuaries should be converted to game management areas under control of the Nova Scotia Department of Lands and Forests. Such control should cover hunting and trapping seasons, bag limits and number of entries.

Action to date - Held for further study.

Recommendation Number XIII - The present status of Waverly Sanctuary should remain unchanged.

Action to date - No change is foreseen as recommended.

Recommendation Number XIV - The present fish conservation and development programs should be reviewed in order to assess the results of past expenditures.

Action to date - Increased expenditures will be made to allow the employment of additional biologists and staff to increase conservation measure.

Recommendation Number XV - Mink ranging should be placed under the jurisdiction of the Nova Scotia Department of Agriculture and Marketing.

Action to date - Carried out as recommended.

Fur, Fish, Game and Recreation Segment

Committee Members

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G. Chapman	-	Truro
W. S. Dickie	-	Halifax
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